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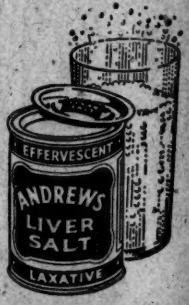

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MARCH 24 1945

THERAPEUTIC TRIAL OF METHIONINE IN INFECTIVE HEPATITIS*

BY

CLIFFORD WILSON, D.M.

Major, R.A.M.C.

M. R. POLLOCK, M.B., B.Chir. AND A. D. HARRIS, M.R.C.S., L.R.C.P.

During the present war there has been a greatly increased incidence of liver disease due to infective hepatitis, arsenotherapy jaundice, and homologous-serum jaundice following inoculation with yellow-fever vaccine. The problem of treatment has produced a renewed interest in the relation of dietary factors to liver disease. Most animal experiments recorded in the literature have been concerned with the production of cirrhosis of the liver and its relation to the fat content of the diet or to liver metabolism of fat. More recently, however, certain protein constituents have been shown to have an important bearing on the production of acute liver damage. Davis and Whipple (1919) found that skimmed milk or casein protected the liver against the toxic action of chloroform. Subsequent work (Miller, Ross, and Whipple, 1940; Miller and Whipple, 1942) revealed that the sulphur-containing amino-acids, particularly methionine, were the specific protective factors. These experiments were performed in dogs fed on a very low protein diet. Messinger and Hawkins (1940) found that in dogs a high protein diet protected the liver against the toxic action of arsphenamine; and Goodell, Hanson, and Hawkins (1944), using a similar technique to that of Miller and his colleagues, showed that methionine exerted a specific protective action against mapharside. More recently it has been discovered that protein deprivation alone gives rise to acute liver damage, which can be prevented by the addition of sulphur-containing amino-acids to the diet. Daft, Sebrell, and Lillie (1942) reported that cystine and methionine prevented the hepatic haemorrhages and necrosis which occur in rats on a low-protein high-carbohydrate diet. Himsworth and Glynn (1944) demonstrated that this protective action was independent of other dietary factors.

From these experiments it is apparent that protein deprivation in animals produces or predisposes to acute hepatic necrosis and that the sulphur-containing amino-acids, particularly methionine, protect the liver from the effects of protein deficiency. It was on the basis of these experiments that the present therapeutic trial of methionine was undertaken. The object of the trial was to discover whether oral administration of the amino-acid had a beneficial effect on the course of the disease and, in particular, whether the period of incapacity could be shortened.

Material

The trial was carried out on 100 Service patients with infective hepatitis, admitted to hospital under the M.R.C. Jaundice Unit. Methionine was administered to alternate cases. All were males, except three in the treated group and two in the control group. The average duration of symptoms of all cases on admission was 8.3 days, the average interval between the appearance of dark urine and admission was 3.9 days, and the majority of the patients had been jaundiced one to two days.

Methods

dl-methionine was given in daily doses of 5 g. from the time of admission until the urine had been bile-free (using the foam test) for five days. This quantity of methionine is probably roughly equal to the average content of the normal diet. The amino-acid was administered in morning and evening doses of 2.5 g. each. A fresh solution was made daily, kept in the refrigerator, and given ice-cold, flavoured with orangeade. Control subjects received orangeade alone. There was no restriction of diet except that greasy foods were omitted, and all patients received a supplementary pint of milk and one egg daily. It was impossible to give a fixed diet owing to variation in the appetite at different stages of the disease. Sample analyses showed that during the period of diminished appetite (i.e., during the first few days after admission) the amount of food actually consumed contained approximately 60 g. protein, 70 g. fat, and 240 g. carbohydrate, with a total calorie value of 1,900. During the later stages, after the appetite had returned to normal, the values were 120 g. protein, 130 g. fat, 450 g. carbohydrate; calorie value 3,500. The majority of patients were kept in hospital until they were fit to resume training at a convalescent depot, from which they returned for examination one month after discharge from hospital.

Comparison of the treated and control groups was based on clinical and biochemical criteria. The clinical criteria were: (1) duration of anorexia after admission; (2) duration of jaundice after admission; (3) duration of liver enlargement after admission; (4) duration of liver tenderness after admission; (5) period in hospital; (6) frequency of relapses or recrudescences. The majority of relapses or recrudescences were observed before discharge from hospital; we have included any deterioration of the patient's condition during recovery which led to a return of symptoms with increase in biliuria and rise in the serum bilirubin.

The biochemical criteria employed were: (1) duration of biliuria; (2) interval between admission and return of serum bilirubin to 2 mg. per 100 c.cm.; (3) maximum serum bilirubin; (4) hippuric acid synthesis after the disappearance of bile from the urine, as a test for recovery of liver function. The foam test for bilirubinuria was used, and serum bilirubin was estimated by the method of Malloy and Evelyn (1937). The intravenous modification (Quick, 1939) of the hippuric acid synthesis test was employed.

Comparability of Control and Treated Cases

The following criteria were used to determine whether the control and treated cases were comparable: (1) age; (2) interval between first symptom and admission; (3) interval between appearance of dark urine and admission; (4) percentage of cases admitted with rising serum bilirubin.

TABLE I.—*Comparability of Treated and Control Groups*

	Treated	Controls	Difference	D./S.E.
Number of cases	50	50		
Age (mean in years)	26·7	27·2	0·5	0·42
Onset to admission (mean in days) ..	7·5	9·2	1·7	1·84
Dark urine to admission (mean in days)	4·4	5·7	1·3	2·14
Number of cases with rising serum bilirubin on admission	25	25		

The comparative figures for the two groups are given in Table I. The age distribution was very similar, with mean

* A report to the Medical Research Council.

values of 27.2 (controls) and 26.7 years (treated cases). The mean duration of the disease before admission was a little shorter in the treated group (7.5 against 9.2 days), which might produce a slight bias in favour of the untreated cases in respect of criteria measured from the date of admission. There were 29 patients in the treated group with less than seven days' history on admission, compared with 23 in the control group: as will be seen later, comparison of these early cases does not give significantly different results from those obtained by comparison of all cases. Thus the groups may be regarded as comparable in spite of the shorter mean duration before admission in the treated cases. Furthermore, the duration of the disease before admission is largely determined by the length of the pre-icteric stage; this we have found to bear no relation to the severity or duration of the icteric stage, on which our comparison is mainly based. In both groups exactly half the cases showed a rising serum bilirubin after admission. This is not an entirely satisfactory criterion, since estimations were made on admission and every third day subsequently, so that if methionine had an immediate beneficial effect a rising serum bilirubin on admission might have been checked in some cases. The general results of the investigation indicate that such an occurrence is unlikely. On the several criteria employed, it may therefore be assumed that the control and treated groups are comparable.

Results

A comparison of the clinical and biochemical criteria in treated and untreated patients is made in Table II. Figures

TABLE II.—*Comparison of Clinical and Biochemical Criteria of Severity and Duration in Treated and Control Groups*

	All Cases				Early Cases			
	Treated	Controls	Difference	D./S.E.	Treated	Controls	Difference	D./S.E.
Number of cases ..	50	50			29	23		
Duration of anorexia (days)	8·3	8·7	+0·4	0·17	7·7	10·7	+3·0	0·79
Duration of jaundice (days)	16·0	18·6	+2·6	0·96	17·9	17·8	−0·1	0·02
Duration of liver enlargement (days)	20·8	23·9	+3·1	0·67	21·6	24·2	+2·6	0·40
Duration of liver tenderness (days)	21·5	22·8	+1·3	0·47	20·5	24·8	+4·3	0·67
Period in hospital (days)	32·0	36·4	+4·4	1·33	33·9	32·1	−1·8	0·35
Number of relapses	5	9	+4	1·14				
Duration of bilirubinuria (days)	13·2	16·7	+3·5	1·59	14·8	17·0	+2·2	0·55
Duration of hyperbilirubinaemia (days)	18·1	21·9	+3·8	1·20	21·1	20·2	−0·9	0·19
Maximum serum bilirubin (mg./100 c.cm.)	12·0	12·3	+0·3	0·20	12·0	12·2	+0·2	0·11
Final hippuric acid test	1·039	1·058	−0·019	0·36	1·007	1·125	−0·118	1·49

+ = Difference in favour of treated cases. − = Difference in favour of controls. Early cases were admitted within 7 days of onset. All figures except number of relapses are mean values. Time intervals are measured from admission—i.e., from the beginning of treatment. Duration of hyperbilirubinaemia is the interval between admission and return of serum bilirubin to 2 mg./100 c.cm. Hippuric acid test is expressed as grammes of sodium benzoate excreted in 1 hour.

are given for all cases, and for early cases admitted with less than seven days' history of symptoms. The majority of criteria show a slight bias in favour of the methionine-treated group, but the differences are not statistically significant.

The mean duration of jaundice after admission was 16.0 days in treated patients and 18.6 days in controls. This is not a significant difference (D./S.E.=0.96). In early cases the difference was negligible (17.9 against 17.8 days). Duration both of liver enlargement and of liver tenderness was again slightly longer in the control than in the treated series, and the early cases showed a similar but not significant difference. Duration of stay in hospital was 4.4 days shorter in the treated group (32.0 days) compared with the controls (36.4 days); in early cases the difference was reversed (33.9 days, treated; 32.1 days, controls). There were five relapses in the treated group, compared with nine in the control group, but this difference is less than twice the standard error (D./S.E.=1.14). Duration of anorexia was almost the same in the two groups (8.3 days, treated; 8.7 days, controls), although in early cases anorexia lasted 3 days longer in controls.

Comparison of the biochemical criteria showed similar sma differences in favour of the treated group. The duration bilirubinuria after admission was 13.2 days, treated, again 16.7 days, controls (D./S.E.=1.59); in the early cases the diffe ence was somewhat smaller (14.8 against 17.0 days). Th duration of hyperbilirubinaemia after admission showed similar but not significant difference (18.1 days, treated; 21. days, controls; D./S.E.=1.2); this difference was reversed whe early cases were compared (21.1, treated; 20.2 days, controls The difference in duration of hyperbilirubinaemia was mo pronounced in cases admitted with a falling serum bilirubi which is partly explained by the fact that in these the mea admission serum bilirubin was higher in the control (7.65 m per 100 c.cm.) than in the treated group (5.9 mg. per 100 c.cm. so that half the control cases started with a disadvantag estimated at 2½ to 3 days, compared with the treated cases.

The mean maximum recorded serum bilirubin was almo identical in the two groups. The comparison of maximu serum bilirubin was confined to the 25 cases in each gro admitted with rising serum bilirubin. If, instead of compari the mean values, the cases with rising serum bilirubin on admi sion are subdivided into groups with maximum serum bilirubi of 0 to 5, 5 to 10, and over 10 mg. per 100 c.cm., the distribu tion of cases in these groups of differing severity is very simila in the treated and untreated series (Table III).

TABLE III.—*Distribution of Cases admitted with Rising Serum Bilirubin, according to Maximum Observed Serum Bilirubin*

Maximum Serum Bilirubin	Treated	Controls
0–5 mg./100 c.cm.	1	1
5–10 mg./100 c.cm.	10	7
Over 10 mg./100 c.cm.	14	17
Total	25	25

The hippuric acid test, performed at the end of treatment, showed no significantly different mean value in treated and control cases; in fact, the result was slightly favourable to the controls.

Discussion

One of the difficulties in interpreting the results of therapeutic trials in infective hepatitis is the choice of suitable criteria for comparison. In individual cases of the disease there often appears to be a very variable relationship between the clinical and biochemical findings. We have attempted to overcome this difficulty by comparing as many criteria as possible, so as to obtain a comprehensive picture of the severity and duration of the disease. In a study of over 200 cases we have found that in a large series there is in fact a fair correlation between the clinical and the biochemical criteria of severity used in this comparison.

Although the differences between treated and untreated cases do not appear to be statistically significant, the fact that all the criteria except hippuric acid synthesis show some bias in favour of the treated group suggests that possibly the methionine may not have been without benefit. Since, however, many of the criteria are interdependent their values should not be summated in assessing the effect of methionine treatment. Thus duration of jaundice and duration of biliuria are dependent on duration of hyperbilirubinaemia; and length of stay in hospital, except in a few cases, was decided by the time taken for the serum bilirubin to reach the 2-mg. level.

We conclude, therefore, that oral administration of methionine under the conditions of this trial had no significant effect on the severity or duration of the disease. It must be pointed out that infective hepatitis is rarely diagnosed until jaundice becomes manifest. Even if treatment is started on the first day of jaundice, symptoms may have been present for a week or more, and both symptoms and liver function tests are rapidly improving in the majority of cases. It is apparent that methionine administration does not prevent relapses. We observed five relapses during the course of methionine therapy, and there was no evidence that the degree of liver involvement during these relapses was less than in untreated subjects. Himsworth and Glynn (1944) have suggested that massive hepatic necrosis occurring in the course of infective hepatitis

may be due to nutritional factors. The rarity of this complication would make it extremely difficult to decide this point. It has been stated (Cohen, 1944) that methionine undoubtedly has beneficial effects in "subacute necrosis" of the liver. The proof of this would again demand a large and well-controlled series of cases. In our limited experience methionine has been ineffective in patients who had already developed symptoms of hepatic failure.

Summary

Five grammes of methionine has been administered daily by mouth to alternate cases in a series of 100 Service patients with infective hepatitis. A comparison of clinical and biochemical criteria has shown no significant effect on the severity or duration of the disease or on the incidence of relapses.

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TREATMENT OF INFECTIVE HEPATITIS WITH METHIONINE

BY

G. HIGGINS, J. R. P. O'BRIEN, R. A. PETERS, ALICE STEWART, AND L. J. WITTS

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No therapeutic means have yet been found capable of producing a rapid alleviation of infective hepatitis. There would seem to be justification for seeking such a means among the constituents of proteins. Favourable effects of a diet of high protein and vitamin content have been claimed by some investigators in cases of liver disease (Patek and Post, 1941). In animals it has been shown experimentally that the health of the liver and its capacity to resist the action of toxic agents are influenced by the protein content of the diet (Himsworth and Glynn, 1942). Diets low in protein may produce in animals a cirrhosis of the liver which in many features resembles that seen in man (György and Goldblatt, 1939; György, 1944; Lillie, Daft, and Sebrell, 1941). Of the amino-acids, methionine has proved most effective in preventing the experimentally induced deposition of fat in the livers of animals (for references, see McHenry and Patterson, 1944) and the cirrhosis associated with a low protein intake (György, 1944). From the work of Miller and Whipple (1942), who described its value in preventing necrosis of the liver following chloroform anaesthesia, methionine may have some value in protecting the liver against other toxic substances. In what way methionine acts in these conditions, whether by processes of transmethylation or by a role in sulphur metabolism, is uncertain. Nevertheless, of all the amino-acids, methionine most justifies a trial of its effect upon liver disease in man. Peters *et al.* (1945) have given evidence of a slight beneficial effect of methionine and cysteine upon so-called post-arsphenamine jaundice. While that trial was in progress it seemed worth while to ascertain its usefulness in infective hepatitis.

Details of Trial

All patients suffering from infective hepatitis referred to the hospital between Oct., 1943, and March, 1944, were admitted to the same ward. The total number was 37, and their ages were between 17 and 45 years. Care was taken to exclude patients with liver disease from other causes; no patient who had received neoarsphenamine or who had been exposed to any toxic substance was included in the experimental group. All the patients were kept in bed. Every alternate patient was given methionine. They were not discharged until clinically well and their plasma bilirubin had fallen below 2 mg. per 100 c.cm.* One month after discharge they were seen again and their blood and urine examinations were repeated.

To minimize the chance variation of the methionine content of the meals, all patients, treated and untreated, were put on a diet of low-fat high-protein content, supplemented with extra vitamins. A record was kept of the amount eaten by every patient at each meal. It was estimated that the methionine content of the diet consumed daily was of the order of 2.5 g. To ensure an adequate supply of methionine twice this amount was given to the treated patients. Synthetic *dl*-methionine is not easily taken in solid form. It was therefore made up in the proportions of 10 g. to 283 ml. of water containing 2.8 ml. of concentrated hydrochloric acid; this solution contained 1 g. of methionine in 1 fl.oz. Throughout the day five 1-g. doses were given either in milk or after flavouring with fruit juice. Including that in the diet, the treated patients received daily nearly 7.5 g. of methionine. Some found the amino-acid nauseating, and in others it caused vomiting in the early days of the disease. There was only one instance of a patient's intolerance to the amino-acid. During the experiment one of us (G. H.) developed infective hepatitis. He was admitted to the ward and was given methionine. This induced persistent nausea. He became so intensely jaundiced and ill that the drug was stopped after 7 days. For this reason his case is not included in the series, but is described separately.

A detailed biochemical study was made on all patients. It included blood urea, plasma bilirubin, proteins, phosphatase determinations at 2–3-day intervals, daily urinary excretion of nitrogen, urea, creatinine, creatine, porphyrin, bilirubin, and urobilin, and faecal porphyrin and stercobilinogen studies. A detailed description of these findings will be published later. Only the more simple biochemical investigations, which were thought to reflect adequately the clinical course of the disease and provide criteria for comparing the treated and untreated groups, are being reported here.

Results

In a small series it might happen that all the treated cases were much milder or much more severe than the controls, or that the former were all admitted much earlier or later in the course of the disease than the others. Table I has been compiled to show that in the present series there was no great bias in either group. The treated cases, omitting G. H., included 8 males and 10 females, and the controls 11 males and 7 females. If the severity of the disease be judged by the degree of bilirubinaemia it will be seen that there were 6 severe, 8 moderate, and 4 mild cases in the treated group, and 8 severe, 5 moderate, and 5 mild cases in the control group. This table also shows that in 9 of the treated cases and 10 of the controls the jaundice increased after admission, which suggests that the illness was at about the same stage in both groups when treatment was started. In further support of this is the fact that the length of time from the onset of the illness to the day of admission, which is given in Table II, is not significantly different in the two groups.

TABLE I.—*The Severity of the Bilirubinaemia in 18 Controls and 18 Treated Subjects, and the Number of Subjects in which the Bilirubinaemia Increased after Admission*

	Number of Subjects	
	Treated	Controls
Males	8	11
Females	10	7
Highest level of plasma bilirubin:		
1. Over 10 mg./100 c.cm.	6	8
2. 10 to 6 mg./100 c.cm.	8	5
3. Under 6 mg./100 c.cm.	4	5
Rising plasma bilirubin	9	10

From a consideration of the detailed clinical, biochemical, and haematological studies made during the course of the illness and at the follow-up, it was decided that the duration of anorexia, raised plasma bilirubin, and biliuria provided adequate information for the assessment of the therapeutic value of methionine in infective hepatitis. All the patients

* Plasma bilirubin was estimated by the method of Thannhauser and Anderson (1921).

were afebrile either before or immediately after admission, and there was no consistent change in the pulse rate, white cell count, or sedimentation rate that might have provided alternative criteria of ill-health. The results from all the cases, except G. H., are summarized in Table II, which gives the

TABLE II.—*Duration (in Days) of Anorexia, Bilirubinaemia, and Biliuria*

	Subjects	
	Treated	Controls
Duration of illness before admission ..	8·4 ± 0·61	8·6 ± 0·29
After admission:		
1. Food intake less than 2,000 calories	8·3 ± 0·79	8·06 ± 1·15
2. Plasma bilirubin over 2 mg./100 c.cm.	9·8 ± 0·97	9·9 ± 1·36
3. Biliuria	8·6 ± 0·55	7·2 ± 0·96

In each instance the average number of days, with the standard error, is given or the treated and untreated cases.

length of time after the cases came under observation until : (1) the patient ate at least 2,000 calories a day ; (2) the plasma bilirubin fell below 2 mg. per 100 c.cm.; (3) the bile disappeared from the urine. It will be observed that there was no difference in the two groups in respect of these three criteria.

It might be argued that in the mild cases the slightness of the illness would make difficult a demonstration of the therapeutic effect of methionine. Consequently the results of the investigations upon the 10 most severely jaundiced patients from each group were considered. They are given in Table III.

TABLE III.—*Analysis of the Results Obtained on the 10 Most Severely Jaundiced Cases in Each Group. (Average Values, with the Standard Error)*

	Subjects	
	10 Treated	10 Untreated
Maximum plasma bilirubin (in mg./100 c.cm.)	14·5 ± 1·42	14·5 ± 1·36
Plasma bilirubin over 2 mg. (in days) ..	12·8 ± 0·88	14·1 ± 1·27
Bile in urine (in days)	8·8 ± 0·56	8·9 ± 1·77
Anorexia (in days)	8·7 ± 0·7	8·1 ± 1·67
Number of cases of rising bilirubin	5	8
Time from maximum bilirubin to bilirubin below 2 mg./100 c.cm.	9·6 ± 1·2	11·6 ± 1·42

The average duration of the raised bilirubin in the plasma was 14.1 days in the controls and 12.8 in the treated cases, but the individual variation was so great that the difference was less than the standard deviation. The average duration of the anorexia in the treated cases was 8.7 days, compared with 8.1 in the untreated cases ; clearly the difference is negligible. Five of the treated cases continued to have a rising bilirubinaemia after admission, compared with 8 of the controls ; and there was no difference in the number of days that the bile was present in the urine in the two groups. The average time taken for the plasma bilirubin to fall from its maximum height to below 2 mg./100 c.cm. was 9.6 days in the treated and 11.6 days in the control cases.

Case G. H. differed from the others in the severity and duration of the jaundice. The highest plasma bilirubin concentration determined in the other 36 cases was 24 mg./100 c.cm., and no one remained jaundiced for more than 22 days after admission. In G. H. the plasma bilirubin rose to 32 mg. and remained high for 45 days. Throughout the week that the methionine was given, the jaundice steadily increased and the nausea induced by the amino-acid appeared to have such an unfavourable effect that it was stopped. The peak of the jaundice was reached on the 12th day after admission and the plasma bilirubin remained about 30 mg./100 c.cm. for another 10 days. The patient eventually made an uninterrupted recovery.

Discussion

In a disease in which the mortality rate is low the length and severity of the illness should be appreciably less in treated cases than in untreated ones if the specific remedy produces an effect. The natural course of the disease in infective hepatitis is so variable and the tendency to spontaneous cure so universal that it is almost impossible to decide in any individual case whether the illness has been affected by the treatment. But a comparison of two groups of cases of about equal severity should reveal the presence or absence of a therapeutic effect if one group is treated and the other not, even though it might require a much larger number of cases to show that an apparent effect was statistically significant.

In this trial only slight differences were seen between the patients treated with methionine and those who received none, and, therefore, though the cases were few the amino-acid produced less effect than in the trial reported by Peters *et al.* (1945). This suggests that methionine is clinically of little practical importance in infective hepatitis. In this respect our experience appears to differ from that of Beattie and Marshall (1944a, 1944b) in the treatment of post-arsphenamine jaundice with sulphur-containing amino-acids.

The prophylactic value of methionine has been well established in animals in which liver damage has been produced by the use of diets rich in fat, by reduction of protein intake, or by exposure to noxious substances. These conditions would not seem to apply to the majority of patients suffering from infective hepatitis. Biochemical studies of the plasma protein indicate that reduction in protein intake is not an aetiological factor in the disease, and wartime feeding restricts a high fat intake. Considered from this point of view, the treatment of infective hepatitis with methionine might not be expected to be very efficacious. But there is another possibility. The liver damage had occurred before the patients, already jaundiced, were admitted to hospital for treatment. Methionine might hasten the repair of the damaged cells. This effect, if any, would appear to be too slight to be of clinical significance, for no statistical difference in the time taken to pass from the stage of maximum jaundice was observed between the treated and untreated groups. Although the results of our trial do not suggest that methionine in quantities of 7½ g. daily produces any demonstrable benefit, it is possible that our experimental conditions were not suitably designed for its manifestation. Nevertheless, it will rarely be practicable to treat a high proportion of cases of infective hepatitis at an earlier stage in the disease than was studied in the present experiment.

Summary

Eighteen patients suffering from infective hepatitis were treated with a low-fat high-protein diet with extra vitamins, and another 18 with the same diet supplemented with 5 g. of pure methionine.

The two groups were comparable in respect of the duration of the illness before admission to hospital and of the number of mild and severe cases.

Treatment with methionine did not significantly affect the clinical course of the illness, the anorexia, or the average duration of biliuria or of bilirubinaemia.

We are indebted to M. W. Stanier, J. Badenoch, B. Glascock, W. Wakelin, L. A. Rawlings, and P. Quelch for practical assistance; we are also grateful to R. H. S. Thompson for advice. This trial was made possible by the generous supply of synthetic methionine by the Ministry of Supply.

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The Ministry of Health has sent to all local authorities and port health authorities a folder giving details of new publicity material available for local use in support of the educational campaign on venereal diseases. The central publicity undertaken during the past two years by the Ministry, in conjunction with the Ministry of Information and the Central Council for Health Education, is being continued; and recently large posters have been displayed on hoardings throughout the country with the object of drawing public attention to the seriousness of the problem, and of increasing the effectiveness of the detailed education carried out through advertisements, films, lectures, leaflets, etc. The display of posters on the subject of venereal diseases, undertaken for the first time in this country, has aroused no criticism, and there is evidence that the campaign as a whole continues to have the approval of the vast majority of the public. The Minister considers it important to maintain this educational publicity during the next twelve months, and to intensify it.

THE ANTIDIURETIC ACTION OF NICOTINE AND OF SMOKING

BY

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Nicotine has been well known since the time of Langley as a substance which stimulates the ganglia of the sympathetic system. Langley painted a solution of nicotine on a ganglion to determine what effects followed the stimulation of the cells present in it. He was thus able to locate the synaptic connexions of the sympathetic system. When nicotine is injected intravenously the stimulation of the ganglia results in a rise of blood pressure and a raised pulse rate. Nicotine also stimulates the carotid body, and so increases respiration. Finally, nicotine in sufficient doses produces convulsions. The experiments to be described show that, in addition to these properties, nicotine has an antidiuretic action, probably due to stimulation of the hypothalamus, and that man is so sensitive that the action can readily be demonstrated in some subjects after one cigarette.

In 1939 Dr. Mary Pickford demonstrated that when a diuresis is produced in a dog by giving it water, the diuresis is promptly inhibited by the intravenous injection of acetylcholine. To observe the effect a large dose—1 mg.—was used, and to exclude the action on the heart, on the blood vessels, and on the intestines atropine was given to the dog beforehand. The antidiuretic effect was shown to be due to the liberation of the hormone of the posterior lobe of the pituitary gland, because when the posterior lobe was removed the injection of acetylcholine no longer inhibited a diuresis.

Since this effect of acetylcholine was exhibited in the presence of atropine, it seemed likely to belong to those effects of acetylcholine which Dale (1914) called nicotine-like. If so, it was to be expected that nicotine itself would exert a similar action.

Observations on Rats

Experiments were therefore performed with groups of 16 rats to which water was given by stomach-tube to produce a diuresis (Burn, 1931); the antidiuretic action of acetylcholine was confirmed, and it was then found that the intravenous injection of 0.1 mg. of nicotine acid tartrate, given 45 minutes after the water, inhibited the diuresis during 45 minutes. The least dose of nicotine which, given subcutaneously, would exert an antidiuretic action was next found. In Fig. 1 is shown a composite record of two experiments on 16 rats. They were males, about 190 g. in weight; after being kept without food overnight they were each given warm water by stomach-tube (5 c.cm. per 100 g.) and put in four cages for urine collection. The urine was recorded every 15 minutes. After 30 minutes from giving the water, 8 of the rats were injected with nicotine acid tartrate, 0.5 mg. per 100 g. The other 8 were injected with saline. The experiment was repeated on another day, when the rats previously injected with nicotine were injected with saline, and vice versa. Fig. 1 shows that rats when injected with nicotine had a larger diuresis than the controls during the next 15 minutes, but the diuresis was then inhibited for about 45 minutes. Thus the curve showing the diuresis when the control injection of saline was given is a curve with a single peak 75 minutes after the water was given; the curve when nicotine was injected is a curve with two peaks, in between which is the inhibition due to the injection of nicotine. When the experiment was repeated with half the dose of nicotine no inhibition was seen.

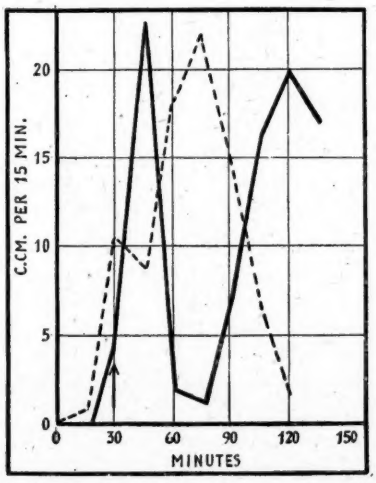

FIG. 1.—The broken line shows course of excretion of water given by stomach-tube to 16 rats at zero. The solid line shows course of excretion when each rat received 0.25 mg. nicotine (base) by subcutaneous injection 30 min. after it received water. Note period of inhibition between the two peaks of excretion.

It is very probable that the increased excretion seen as the first peak in Fig. 1 immediately after the nicotine is explained by a rise of blood pressure due to the nicotine. This rise would increase the rate of diuresis. In support of this explanation is the observation that when a similar experiment to that shown in Fig. 1 was performed using tyramine instead of nicotine, the peak of the diuresis occurred earlier than in the controls, though when tyramine was injected there was no period of inhibition and therefore no second peak. Tyramine causes a rise of blood pressure as does nicotine, but by a purely peripheral action on heart and vessels.

Effect of Pituitary Removal

The main point of interest, however, was the inhibition of diuresis between the two peaks in Fig. 1. It was next shown that no such inhibition occurred when rats from which the pituitary gland was removed were used instead of normal rats. We are indebted to Dr. Edith Bülbring for preparing hypophysectomized rats for this work. These rats were injected daily with anterior pituitary extract kindly sent to us by Dr. I. W. Rowlands of the National Institute for Medical Research. They were given water by mouth (6 c.cm. per rat) in the morning of each day, and observations on water diuresis were then made in the afternoon after giving more water (6 c.cm. per rat). The graph in Fig. 2 shows that the injection of nicotine in the same dose and at the same time as in Fig. 1 failed to produce any inhibition of diuresis. When the experiments were complete the rats were killed and the pituitary fossa of each was examined for remnants of gland. None were found. This result made it clear that the action of nicotine in exerting the antidiuretic effect depended on the presence of the pituitary gland, and probably on the posterior lobe.

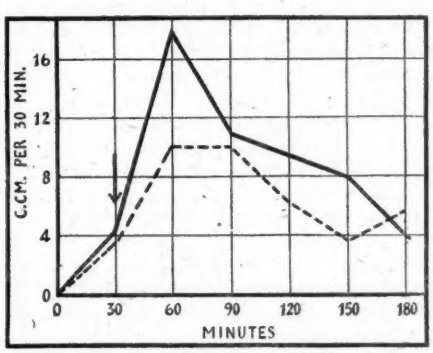

FIG. 2.—A similar experiment to that in Fig. 1, carried out on 10 rats from which the pituitary body had been removed. The broken line represents the control experiment, the solid line the experiment in which nicotine was injected. There is no phase of inhibition.

Nicotine is not the only alkaloid which exerts this antidiuretic action, for de Bodo (1944) has found that morphine has a similar action in the dog, exerted through the neurohypophysis.

Observations on Man

The least dose of nicotine which, given subcutaneously, produced an antidiuretic effect in rats was 0.5 mg. of the acid tartrate per 100 g.: this corresponds to 0.25 mg. of nicotine base per 100 g. If man were equally sensitive per unit of body weight, 150 mg. of nicotine base would be required to exert an effect on a man of 60 kg. Despite the unlikelihood of observing a positive result in man, it seemed worth while to determine whether the smoking of cigarettes had an antidiuretic effect. In performing the experiment the subject, when his stomach was empty, passed water every 15 minutes and recorded the volume. When this was reasonably uniform he drank one litre of warm water and continued to pass water every 15 minutes. The excretion rose to a peak usually about 75 or 90 minutes after drinking the water and then fell to the original rate of excretion in about 2½ hours from the time of drinking. In Fig. 3, curve A shows the normal diuresis thus obtained in E. M. V. W. Curve B shows the course of the diuresis in E. M. V. W. when he smoked three cigarettes in succession, beginning 45 minutes after drinking

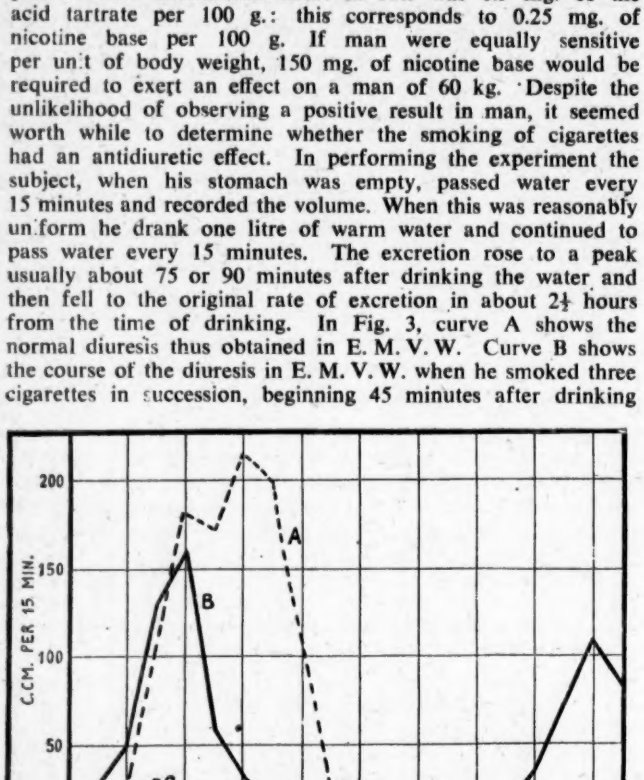

FIG. 3.—Subject E. M. V. W. drank 1 litre of water at zero. The broken line shows excretion of water in c.cm. per 15 min. The solid line shows excretion in a second experiment when he smoked 3 cigarettes, beginning 45 min. after drinking the water. Note the long period of inhibition.

the water. The diuresis had already begun when smoking started, but inhibition occurred after 15 minutes, and the effect of the three cigarettes was to produce complete inhibition during 2.5 hours; after which the diuresis began again to reach a peak 4.5 hours after drinking the water. E. M. V. W. is a healthy male of 26 years. In smoking the three cigarettes, he did so as rapidly as possible and inhaled deeply. He smoked them in 20 minutes. He suffered from vertigo and felt very sick; 5 minutes after finishing smoking he vomited, and continued to feel sick for one hour. The inhibition of the diuresis outlasted these symptoms, and in several other observations an inhibition was observed without the production of any appreciable symptoms at all. Thus in Fig. 5 an observation on the same subject—E. M. V. W.—is recorded, in which inhibition was produced by one cigarette; he noted "slight dizziness" while he smoked, but nothing more.

Variation among Subjects

This antidiuretic effect of smoking varied a good deal in different subjects. Subject E. M. V. W. was unusually sensitive, for, as seen in Fig. 5, the smoking of one cigarette produced an effect on him. Subject L. H. T., observations on whom are shown in Fig. 4, was less sensitive than E. M. V. W., for the smoking of one cigarette had no effect. In another subject, G. B. P., who was a fairly heavy smoker, the smoking of three cigarettes had only a very slight effect. However, out of seven subjects, six of whom were males between 20 and 26, one cigarette had an inhibitory effect on diuresis in three, two cigarettes had an inhibitory effect in two others, and three cigarettes had an inhibitory effect in a sixth. Only G. B. P. can be considered as scarcely affected by three cigarettes. He smoked about 20 cigarettes a day in addition to two or three pipes. Another subject who was a regular pipe smoker observed no inhibitory effect from smoking a pipe; on the contrary, he observed an increased rate of excretion, probably due to the rise of blood pressure which the smoking caused. A positive effect was recorded only when as a result of smoking there were two peaks of diuresis as shown in Figs. 3, 4, and 5, and the time interval between these peaks is expressed as "delay" in the accompanying Table.

Table showing Experimental Results

Subject	Age	No. of Cigarettes	Delay (hours)
L. H. T.	21	3	3·5
"	"	3	2·0
"	"	1	Nil
E. M. V. W.	26	3	3·5
"	"	1	1·75
J. H. B.	51	1	3·25
T. H. C. L.	21	2	3·0
J. R. W. G.	19	2	3·25
G. B. P.	19	3	Nil

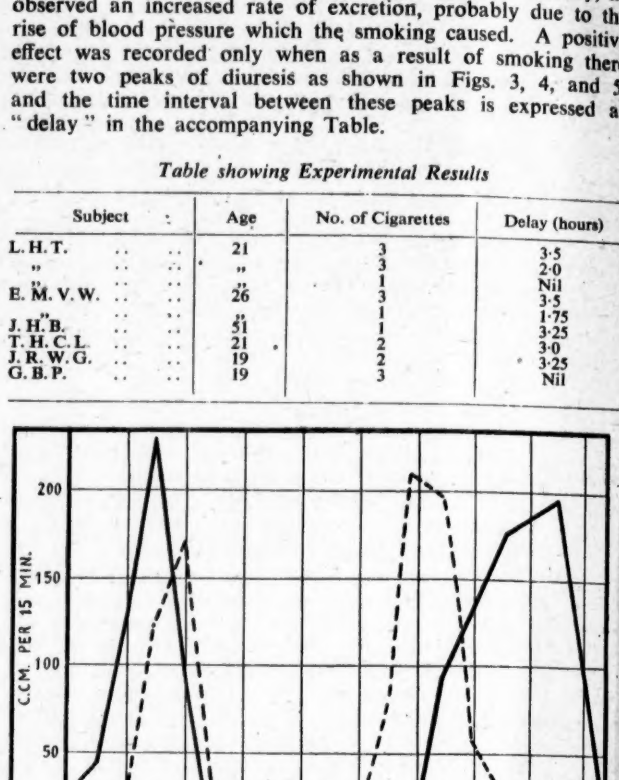

FIG. 4.—Similar experiments to that in Fig. 3, on subject L. H. T. The solid line is an experiment carried out smoking 3 cigarettes when L. H. T. was not otherwise smoking. The broken line is an experiment carried out also with 3 cigarettes when he was smoking 12 to 15 a day.

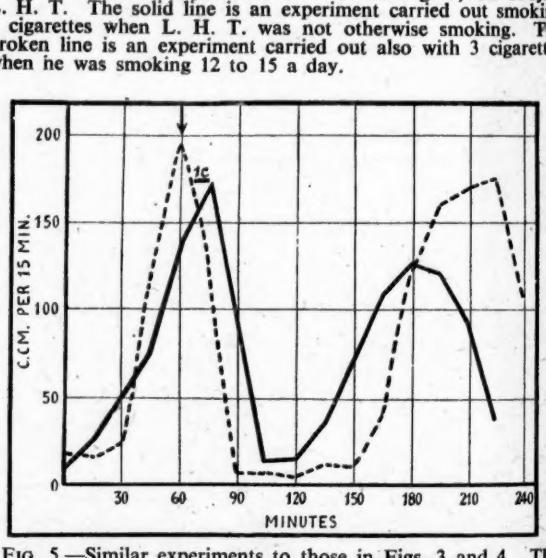

FIG. 5.—Similar experiments to those in Figs. 3 and 4. The broken line is an experiment in which 0.5 mg. nicotine (base) was injected intravenously at the arrow 60 min. after drinking the water. The solid line shows the effect of smoking one cigarette in the same subject.

Two experiments on L. H. T. afford further evidence that the antidiuretic effect is less when tolerance is established. These experiments are shown in Fig. 4. The first was done when L. H. T. had just finished a period of training for rowing, and had not been smoking; the delay was 3.5 hours. The second experiment was done seven months later, when L. H. T. was smoking 12 to 15 cigarettes a day; the delay was only 2 hours.

Intravenous Injection of Nicotine

In view of the large dose of nicotine required to produce the antidiuretic effect in the rat, it was surprising that smoking should exert an antidiuretic effect if this was due to the nicotine, as the amount of nicotine in the smoke seemed far too small. Some experiments were then carried out to determine whether small doses of nicotine would exert an antidiuretic action in human subjects. The nicotine was injected intravenously as acid tartrate when a diuresis was beginning. The effect of 1 mg. nicotine (base) in R. P. M. is shown in Fig. 6; the period of inhibition between the two peaks was 2.75 hours. In R. P. M. the injection of 0.5 mg. nicotine (base) had no antidiuretic effect. In E. M. V. W., however, the injection of 0.5 mg. nicotine (base) had an antidiuretic action such that the period between the two peaks was 2.75 hours (see Fig. 5). Now, as Fig. 5 shows, in this subject the smoking of one cigarette produced an antidiuretic action lasting 1.75 hours, so that the effect of one cigarette was rather less than that of 0.5 mg. nicotine (base).

Amount of Nicotine in Cigarette Smoke

Is there so much nicotine as this in the smoke of one cigarette? Schnedorf and Ivy (1939) have stated that one cigarette of the type they used yielded, in smoke taken in, about 0.2 mg. With the help of Mr. H. W. Ling we have determined the amount of nicotine which a smoker receives from British cigarettes. We connected a glass cigarette-holder to a long U-tube immersed in cold water. The other end of the U-tube was connected to a filter pump by a T-piece with one limb open to the air. When the filter pump was turned on gently, air was sucked in through the open limb of the T-piece. When this limb was closed, the air was sucked in through the cigarette-holder. We put a cigarette in the holder, lighted it, and, by alternately closing and opening the side limb of the T-piece, sucked some of the smoke into the U-tube and allowed part of it to escape into the air, imitating as closely as possible the ordinary smoking of a cigarette. The nicotine in the smoke was condensed in the U-tube. As a rule we "smoked" 10 cigarettes in the apparatus in succession. We then washed out the U-tube with ether, evaporated off the ether, and dissolved the residue with a little alcohol and 1% tartaric acid. As a rule the residue from 10 cigarettes (about 60 mg.) was collected in 10 c.cm. This solution was then estimated by comparing it with a known solution of nicotine acid tartrate for its pressor effect on the blood pressure of a spinal cat prepared by Dale's method (Burn, 1928). One estimation on 10 cigarettes gave the result that the smoke of one cigarette contained more than 0.66 mg. but less than 0.75 mg. nicotine (base). Estimations made on different batches of Gold Flake and Player's cigarettes gave figures varying between 0.6 mg. and 0.75 mg. nicotine (base) in the smoke of one cigarette. We observed no difference between the brands.

Now if 0.6 to 0.7 mg. nicotine enters the mouth of a smoker, not all of it will enter the blood. A certain proportion will do so, however, depending for its amount on how much the smoker inhales. When the smoker inhales, probably about 0.3 to 0.4 mg. reaches the alveoli of the lungs, from which it must be rapidly absorbed. This conclusion accounts very well for the observation on R. P. M. and E. M. V. W. In R. P. M. neither the intravenous injection of 0.5 mg. nicotine (base) nor the smoking of one cigarette had any antidiuretic effect. In E. M. V. W. the intravenous injection of 0.5 mg. nicotine (base) had an antidiuretic effect lasting 2.75 hours, and the smoking of one cigarette an effect lasting 1.75 hours.

Amount of Posterior Lobe Hormone Liberated

The antidiuretic action of nicotine depends on the pituitary body, and almost certainly, as Mary Pickford proved for acetylcholine, on the posterior lobe. Presumably the nicotine stimulates the supra-optic nucleus and adjacent nuclei, which, like it, send nerve fibres to the posterior lobe. When impulses arrive in the posterior lobe the antidiuretic hormone is released. What amount of hormone, in terms of the ordinary pituitary (posterior lobe) extract, is released when nicotine is injected? The ordinary posterior lobe extract is measured in units, the official strength being 10 units per c.cm. An attempt was made in subject R. P. M. to imitate the effect of 1 mg. nicotine (base) injected intravenously, as shown in Fig. 6, by injecting posterior lobe extract also by the intravenous route.

Posterior lobe extract was first injected in a dose of 0.05 unit. The antidiuretic effect, shown at B in Fig. 6, was shorter than that of 1 mg. nicotine (base) by 30 to 45 minutes. In the next experiment twice this dose was used—0.1 unit—but it produced the same effect. These results indicated that when posterior lobe extract was given intravenously the duration of the effect was not proportional to the size of the dose, but probably depended on the rate of destruction of the hormone. This was supported by the fact that when two doses, each of 0.05 unit, were given at an interval of 45 minutes the antidiuretic effect was much more like the nicotine effect, being in fact slightly greater. Thus the results indicated that an intravenous dose of nicotine does not exert a single momentary stimulus to the posterior lobe, but rather a stimulus which persists for 30 to 45 minutes.

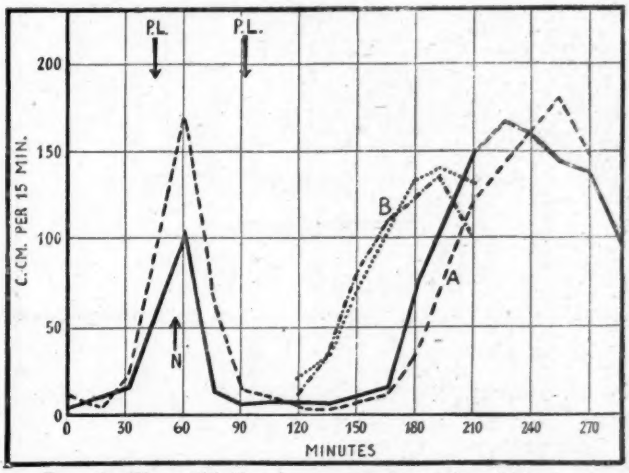

FIG. 6.—The solid line is an experiment in which 1 mg. nicotine (base) was injected intravenously into R. P. M. at arrow N. The broken line A is an experiment in which 0.05 unit posterior lobe extract was injected twice at an interval of 45 min. at arrows P.L. The lines at B are experiments in which (*a*) 0.05 unit and (*b*) 0.1 unit were each injected once.

Discussion

Although the effect of smoking in causing a rise of blood pressure has been known since 1907 (Hesse), that it does so cannot yet be said to be a matter of common knowledge. Recent observations by Roth, McDonald, and Sheard (1944) provide fresh evidence on the point, and also demonstrate the fall of skin temperature due to the vasoconstriction of the skin which occurs. The rise of blood pressure, of pulse rate, and of vasoconstriction in the skin are all the result of the stimulation by nicotine of sympathetic ganglion cells. The observations recorded in this paper indicate that it is not only the nerve cells of the sympathetic ganglia which are stimulated by nicotine but that nuclei in the hypothalamus are also stimulated, as a result of which the hormone of the posterior lobe of the pituitary is liberated in the blood. The effect was accompanied in several of the observations by symptoms regarded as toxic effects of nicotine, such as vertigo, nausea, and even vomiting. These effects were not always present, and there is no doubt that the antidiuretic action is observed in their absence.

If smoking causes secretion of the antidiuretic hormone it seems reasonable to suppose that the other hormones of the posterior lobe, such as the oxytocic hormone, are also liberated. If this occurs, smoking should accelerate labour.

Many believe that there is a connexion between smoking and gastric ulcer, and since Dodds *et al.* (1934) have shown that the injection of posterior lobe extract into rabbits causes gastric ulcer, it might appear that our experiments suggest the mechanism of the connexion. This is very doubtful; large amounts of posterior lobe extract are needed to produce ulcers, and the effect of pharmacopoeial doses of posterior lobe extract

in man is to diminish gastric acidity, not to increase it. This we have observed here, in confirmation of other workers. Our experiments do, however, raise the question whether those with impaired kidney function should be allowed to smoke.

Summary

Nicotine exerts an antidiuretic effect in the rat. This effect does not occur if the pituitary body is removed.

Smoking exerts an antidiuretic effect in man. In a sensitive subject one cigarette will inhibit diuresis for 2 to 3 hours.

The same antidiuretic effect is produced in man by the injection of nicotine intravenously in an amount approximately equal to the amount absorbed from one cigarette.

It is probable that the nicotine absorbed from cigarette smoke stimulates the supra-optic nucleus of the hypothalamus and causes a discharge of the hormone from the posterior lobe of the pituitary gland.

Our thanks are due to those already mentioned in the paper, and also to Mr. E. M. Vaughan Williams and Mr. R. P. Michael for their care in making observations.

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ENFORCED LEISURE

A STUDY OF THE ACTIVITIES OF OFFICER PRISONERS OF WAR

BY

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Captain, R.A.M.C.

Recent articles and correspondence in the medical press on prisoner-of-war mentality have naturally caused considerable discussion in P.O.W. camps. Whether rehabilitation on a large scale will be necessary or not is difficult for the individual to say. Nevertheless some observations on how the P.O.W. spends his time may be of general interest. In this paper an attempt is made not to produce an average individual but to assess what contribution the average prisoner makes to the life of the camp.

Oflag VII/B was originally formed as a camp for young officers. Its strength varies, but in the period under review is about 1,700, of whom 110 are Canadians, 117 are Australians, 87 are New Zealanders, and the rest are from the British Isles. There is a sprinkling of officers from other parts of the Empire. One is justified in regarding it as presenting a fair cross-section of the educated classes of the Empire. The living conditions, as regards accommodation, are fairly similar, while the food is completely standardized. Facilities for recreation, study, sport, etc., are available in exactly the same measure to everybody. The extent to which these facilities are exploited naturally depends on the individual.

Despite the limitations of the questionary form of investigation, it was chosen as being the only one practicable in the peculiar circumstances of captivity. A questionary covering all possible forms of camp activity was drawn up. This was issued to a number of patients in hospital, who were asked to allocate times on the basis of an average day to the various activities. The data thus collected proved interesting, and it was decided to extend the investigation to get a fair sample of the camp as a whole. The questionary was issued to various people, with a request that in each case every member of the mess or room should answer it. In some cases the return was 100%, in others there were one or two men who, for various reasons, refused to co-operate. Nevertheless I think that the return represents a fair cross-section of the camp.

It will be observed that no name is asked for; nevertheless, by inquiry it was generally possible to trace individuals when any point required clarifying. One objection raised was, What is the difference between "study" and "serious reading" or between "light" and "serious" reading? To me it seems purely an individual distinction. Most people know what they are trying to study and they also have their own standards of serious and light reading, and I have accepted these standards.

Form of Questionary

Country (or Dominion) of Origin: *Age:*
Previous Occupation:
Length of Captivity: *Educationa Standard:*
Average Day:

I. Camp official (administrative, parcel, education, medical, sports, etc.) ..... hrs.
II. Activity for benefit of community (non-official): e.g., work on wood pile, gardening, tutoring, block cooks, Toc H nursing, voluntary massage, or any other altruistic activity ..... hrs.
III. Study: (*a*) Prescribed course for examination ..... hrs.
(*b*) Language—which? ..... hrs.
(*c*) General study ..... hrs. } ..... hrs.
IV. Handicrafts: Model-making, woodwork, tinsmithing, knitting, etc. ..... hrs.
V. Art: Painting, drawing, sketching, modelling, etc. ..... hrs.
VI. Music: (*a*) As performer. What type of instrument? ..... hrs.
(*b*) Listening ..... hrs. } ..... hrs.
VII. Writing: (*a*) Books or articles for possible publication ..... hrs.
(*b*) Diary or scrapbook for own amusement ..... hrs. } ..... hrs.
VIII. Dramatics: (*a*) Actor ..... hrs.
(*b*) Producer, stage hand, scenery designer, etc. ..... hrs. } ..... hrs.
IX. Reading: (*a*) Serious ..... hrs.
(*b*) Light ..... hrs. } ..... hrs.
X. Sport or exercise: (*a*) Active ..... hrs.
(*b*) Spectator ..... hrs. } ..... hrs.
XI. Indoor games, chess, or cards for amusement or nominal stakes ..... hrs.
XII. Gambling ..... hrs.
XIII. Serious discussion ..... hrs.
XIV. Aimless gossip (war, reminiscences, local gossip) ..... hrs.
XV. Sleeping and eating ..... hrs.
XVI. Time spent on household fatigues ..... hrs.
XVII. Hobbies: bird-watching, flowers, collecting (types of cigarettes, etc.) ..... hrs.
XVIII. Do you attend general interest lectures?
XIX. Do you work to a time-table?
XX. Have you improved, or not, physically? How? Since when?
XXI. Have you improved, or not, mentally, especially with regard to interest, concentration, and memory?

Results

TABLE I.—*Returns Collected from 300 Officers*

Average age: 29·8 years.
Educational standard: High, in that 97—i.e., 32·3%—were either University graduates or undergraduates; 16—i.e., 5%—had various professional qualifications.

I. Official duties			35 mins.
II. Altruistic activities			46 „
III. Study: (*a*) Course for exam.	1 hr. 5 mins.	2 hrs. 29 „	
(*b*) Languages	29 „		
(*c*) General	55 „		
IV. Handicrafts			14 „
V. Art			6 „
VI. Music: (*a*) Performer	9 mins.		23 „
(*b*) Listener	14 „		
VII. Writing: (*a*) For public	4 „		7 „
(*b*) Diary, etc.	3 „		
VIII. Dramatics: Actors and stage assistants			3 „
IX. Reading: (*a*) Serious	1 hr. 1 min.	2 hrs. 6 „	
(*b*) Light	1 „ 5 „		
X. Sport: (*a*) Active	1 „ 1 „	1 hr. 24 „	
(*b*) Spectator	23 „		
XI. Cards			20 „
XII. Gambling			11 „
XIII. Serious discussion			24 „
XIV. Aimless gossip		1 hr. 16 „	
XV. Sleeping and eating		10 hrs. 37 „	
XVI. Household fatigues		1 hr. 3 „	
XVII. Hobbies			6 „
Unaccounted time		1 „ 50 „	
		24 hrs. 00 mins.	

XVIII. General interest lectures	Yes = 57·3%;	No = 42·7%
XIX. Work to time-table	„ = 29·0%;	„ = 71·0%
XX. Feeling physically impaired	„ = 33·7%;	„ = 66·3%
XXI. Feeling psychologically impaired	„ = 40·0%;	„ = 60·0%

Discussion of Table I

The first two groups cover most of the actual work required for the running of the camp. The average time of 35 minutes per head for camp administration may appear high to an efficiency expert. 100 forms recorded some kind of activity. Three claimed to work 7 hours and one 6 hours a day, but the majority worked 1/2 to 1 hour a day. (Frequency Diagram 1.)

In Group II 45 minutes also appears high. Nevertheless, in a P.O.W. camp there is a considerable amount of reciprocal service. The massage department in the hospital is entirely staffed by volunteers, all of whom have learned massage in captivity. Block cooking is also done by volunteers; while, apart from the teaching organization, there is an enormous amount of private tuition.

III. *Study.*—The overall averages in this group are misleading (see Frequency Diagrams 3, 4, and 5). (*a*) *Courses:*—29% claim to be following courses of study, and on an average they study 3 hours 46 minutes a day. One claims 11 hours, one 9 hours a day. Although these figures seem high they are not incredible. From reveille onward the study rooms are continuously occupied. (*b*) *Languages:*—Most prisoners have studied some language—usually

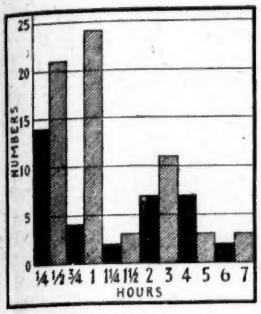


DIAGRAM 1

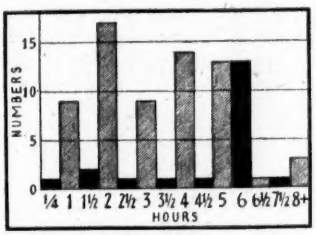
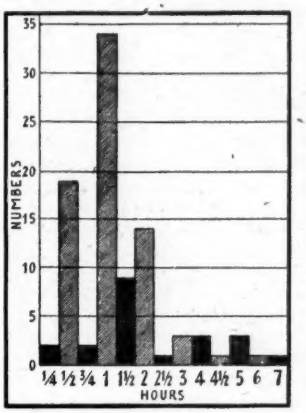


DIAGRAM 3



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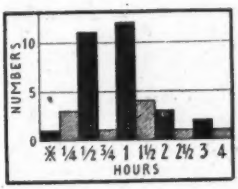


DIAGRAM 8

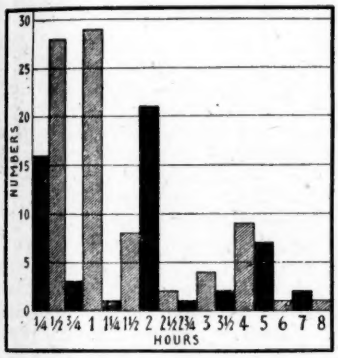
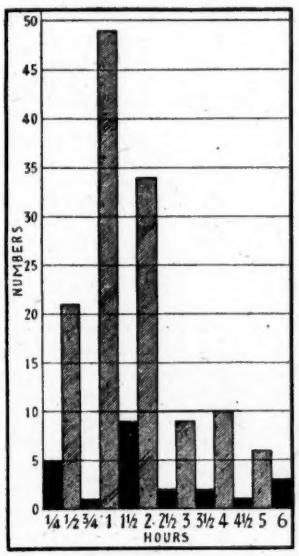


DIAGRAM 2



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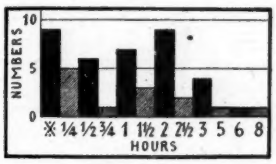

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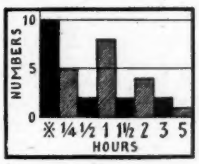

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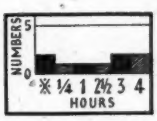

DIAGRAM 10

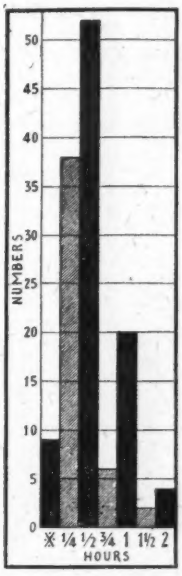

DIAGRAM 9

FREQUENCY DIAGRAM 1.—Group 1, Camp Administration: 100 record some form of activity; 200 record *nil*. (In all these diagrams the "nil" column has been omitted owing to lack of space.)

FREQUENCY DIAGRAM 2.—Group II, Altruistic Activities: 135 record activity; 165 record *nil*.

FREQUENCY DIAGRAM 3.—Group III, Study; (*a*), group taking prescribed course: 87 students.

FREQUENCY DIAGRAM 4.—Group III, Study; (*b*), group studying languages: 93 students.

FREQUENCY DIAGRAM 5.—Group III, Study; (*c*), general study group: 153 students.

FREQUENCY DIAGRAM 6.—Group IV, Handicrafts: 51 occupied: 249 *nil*. * Time claimed, less than 1/4 hour per day.

FREQUENCY DIAGRAM 7.—Group V, Art: 33 occupied; 267 *nil*. * Time claimed, less than 1/4 hour per day.

FREQUENCY DIAGRAM 8.—Group VI, Music; (*a*), Performer: 13 performers; 287 *nil*. * Less than 1/4 hour per day.

FREQUENCY DIAGRAM 9.—Group VI, Music; (*b*), Listener: 132 listeners; 168 *nil*. * Less than 1/4 hour per day.

FREQUENCY DIAGRAM 10.—Group VIII, Dramatics: 9 actors, etc.; 291 *nil*. * Less than 1/4 hour per day.

G rman—at one stage or another in their captivity. In the present sample 31% study, on an average, 1 hour 32 minutes daily. German and French head the list; Russian is popular; every European language has its students. Less well-known languages, such as Gaelic, Afrikaans, Urdu, Malayan, Arabic, receive attention. (*c*) *General study:*—51% register time spent on general study. This represents 1 hour 47 minutes per head, as contrasted with 3 hours 46 minutes in the group pursuing courses of study. It suggests that even in captivity study must have a purpose. The simple pursuit of knowledge is not enough.

IV. *Handicrafts.*—17% are occupied on hand work of some description. Towards the end of winter, knitting was fashionable. Tapestry, needlework, weaving, tailoring, watch-making, model-making, all occupy a certain amount of time, but the total time and the time per head are relatively small.

V. *Art.*—11% devote 32 to 35 hours to drawing, sketching, or painting. This represents about 57 minutes per head.

VI. *Music.*—(*a*) *Performers:*—There are enough musicians in the camp to provide music for all shows and, in addition, to stage a music festival covering symphonic, choral, orchestral, light orchestral, chamber music, and dance band programmes. This, however, is the work of a relatively small number. In the present sample 13 average 1 hour 8 minutes a day, but this figure includes one man who spends 4 hours a day orchestrating music for the various instruments in the camp. (*b*) *Listeners:*—Apart from the musicians the camp has an excellent record library and a fair number of gramophones. 132 people devote, on an average, 32 minutes a day to music—i.e., about two evenings a week.

VII. *Writing.*—(*a*) The number of potential or active writers at 12.3% is probably high. The actual "market" is small, and consists of two monthly camp magazines. (*b*) The number of people keeping diaries—25.3%—also seems high considering the unexciting round of ordinary camp life. However, it is a personal and unexacting form of self-expression, and is one of the few open to a prisoner of war.

VIII. *Dramatics.*—Only 3% claimed to be in any way occupied with the stage. The acting fraternity tend to live together, and it is possible that they are not fairly represented in the survey. Nevertheless, the plays staged in the camp are produced by a small number of good actors—so good, indeed, that the tyro has very little chance. (It is interesting that the most spectacular features of camp life—viz., the Arts and Crafts Exhibition and the theatre shows—are, basically, the work of very few and do not in any degree represent the industry and talent of the camp as a whole.)

IX. *Reading.*—Everybody reads to a greater or lesser extent. The only negative returns in this category were from men who spend several hours a day in study.

X. *Sport.*—Similarly, everyone takes some form of exercise. The limiting factor in some cases is not so much lack of energy or equipment as lack of space, and every sports field is used continuously by fresh teams throughout the hours of daylight.

XI. *Cards and Indoor Games.*—These are not as popular as one might have expected. However, the season (early summer) may to some extent account for this.

XII. *Gambling.*—10% are occupied in games of chance. The camp moralists are inclined to disapprove. Nevertheless it provides a harmless outlet for a variety of captivity and social impulses. The craving for excitement can be satisfied to a certain extent, and the acquisitive instinct can sometimes be gratified without the community being in any way affected.

XIII. *Serious Discussion.*—I consider an average of 24 minutes per head a modest understatement.

XIV. *Aimless Gossip.*—An average of 1 hour 16 minutes per head is probably fair. Normally, there are not enough rumours or camp trivialities to occupy very much more time than this unless one gravitates from group to group. So, for lack of subject-matter, an aimless gossip quite often becomes a serious discussion.

XV and XVI.—Rooms are divided into messes, numbering from 2 to 8 members. Members in turn prepare food and do the fatigues incidental to eating. Sleeping and eating are among the most important of camp activities.

XVII. *Hobbies.*—Naturally there is very little scope for this form of activity. Popular are bird-watching, butterfly-collecting, collecting various brands of cigarettes, coins (?), razor blades; designing homes, motor-cars, yachts. *Unaccounted Time.*—Roll calls occupy about 30 minutes a day. The remainder is taken up in various insignificant ways—"doing nothing," as one man expressed it. No allowance on the questionary was made for meditation. Two people claimed 4 hours a day under this heading.

XVIII. *General Interest Lectures.*—"Occasionally" and "Sometimes" were interpreted as affirmatives.

XIX. *Work to a Time-table.*—I had assumed that most prisoners would slip into some form of daily routine, and, as a matter of habit, stick to it. Apparently the majority do not.

XX.—In an endeavour to avoid the suggestion contained in the words "impaired" or "deteriorated" the question read, "Have you improved, or not, physically?" To my surprise a few admitted to actual physical improvement. 66.3% consider themselves unimpaired or are not certain about it. Of the impaired group the deterioration is expressed as "loss of weight," "no stamina," "teeth and eyes affected," "sinusitis," "asthma developed," "migraine started." In the last two instances I naturally tried to establish some connexion between captivity and the onset. In migraine I was unsuccessful, in that each of the patients had actually had migraine for some years, but the label had been attached only during captivity. Regarding asthma, several cases have developed since capture. Clinically, headache, sciatica, and rheumatism are fairly common, and are to a large extent, no doubt, somatic manifestations of mental strain. Whether competent psychological treatment would, in the circumstances, be successful is an academic matter, because such treatment is not available. In its absence, headache is described as probably due to sinusitis or eye strain and treated accordingly. The other conditions are treated symptomatically—not, unfortunately, with uniform success.

XXI.—It was rather difficult to assess answers, in that a number of replies confused "interest" with "interests," and so some of the men replied: "Memory and concentration worse. Interest wider and improved." In general, it appears that memory and concentration have suffered, while interest is erratic. A few regard their captivity as a total loss, while others, making a virtue of necessity, have used their leisure for broadening their interests. Naturally there is no strict line of demarcation between the physical and mental states, and replies expressing a deterioration in one often express a similar deterioration in the other.

Grouping by Length of Captivity

By way of contrast, and in order to provide a kind of chronological "Prisoners' Progress," replies have been subdivided into four groups—1-, 2-, 3-, and 4-year prisoners respectively. Of further interest is the origin of the groups. Groups 1 and 4 are chiefly from the British Isles, Group 2 is predominantly Canadian, and Group 3 predominantly Australian and New Zealand.

The following is an analysis of the sample summarized in Table I. The number in Group 1 is probably high in proportion to the total number of 1-year prisoners in the camp. The other groups are roughly in proportion.

Group 1	Number 26	Average age 28·8 years
„ 2	„ 36	„ „ 32·8 „
„ 3	„ 81	„ „ 30·3 „
„ 4	„ 157	„ „ 29·1

TABLE II

Group:	1-Year	2-Year	3-Year	4-Year
I. Official duties	22 m.	35 m.	31 m.	39 m.
II. Altruistic activities	37 m.	31 m.	56 m.	45 m.
III. Study:				
(*a*) Course	1 h. 0 m.	48 m.	1 h. 0 m.	1 h. 12 m.
(*b*) Language	9 m.	22 m.	34 m.	31 m.
(*c*) General	50 m.	1 h. 3 m.	1 h. 1 m.	52 m.
	1 h. 59 m.	2 h. 13 m.	2 h. 35 m.	2 h. 35 m.
IV. Handicrafts	2 m.	11 m.	26 m.	11 m.
V. Art	7 m.	2 m.	4 m.	9 m.
VI. Music:				
(*a*) Performer	1 m.	2 m.	10 m.	11 m.
(*b*) Listener	19 m.	7 m.	14 m.	15 m.
VII. Writing:				
(*a*) Publication	5 m.		3 m.	6 m.
(*b*) Diary (percentage writing)	38%	31%	23%	23%
VIII. Dramatics	No comparison possible			
IX. Reading:				
(*a*) Serious	47 m.	43 m.	1 h. 6 m.	1 h. 6 m.
(*b*) Light	2 h. 5 m.	1 h. 11 m.	48 m.	1 h. 2 m.
X. Sport:				
(*a*) Active	1 h. 0 m.	58 m.	1 h. 0 m.	1 h. 2 m.
(*b*) Passive	37 m.	33 m.	16 m.	23 m.
XI. Indoor games and cards	21 m.	35 m.	19 m.	18 m.
XII. Gambling	5 m.	25 m.	12 m.	7 m.
XIII. Serious discussion	13 m.	26 m.	25 m.	25 m.
XIV. Gossip	1 h. 35 m.	1 h. 0 m.	1 h. 0 m.	1 h. 25 m.
XV. Sleeping and eating	11 h. 0 m.	10 h. 40 m.	10 h. 32 m.	10 h. 35 m.
XVI. Fatigues	1 h. 9 m.	1 h. 11 m.	1 h. 9 m.	1 h. 2 m.
XVII. Hobbies (percentage with)	8%	22%	23%	25%
Unaccounted time	1 h. 36 m.	2 h. 37 m.	2 h. 14 m.	1 h. 44 m.
	24 h. 0 m.	24 h. 0 m.	24 h. 0 m.	24 h. 0 m.
XVIII. General interest lectures: Yes	31%	61%	58%	61%
XIX. Work to time-table: Yes	12%	22%	37%	29%
XX. Feeling physically impaired: Yes	15%	47%	40%	33%
XXI. Feeling psychologically impaired: Yes	19%	55%	41%	38%

Discussion of Table II

The similarity between Groups 3 and 4 may be due to two causes: (*a*) larger numbers in groups eliminate the swings in either direction owing to individuals recording high figures in a particular activity; (*b*) possibly, after two years, adjustment to captivity is fairly complete and a more or less stereotyped "average" routine is adopted.

Study.—It is remarkable how quickly first-year prisoners have got down to courses of study.

Music.—Several of the older prisoners have learned music in captivity, which probably accounts for the slight increase in time.

Writing.—The number writing diaries decreases after the first novelty wears off.

Physical Impairment.—In Group 1 this is due to temporary unfitness from wounds. The same applies to a few in Group 2, but, apart from that, there is no clinical difference between the groups. Nevertheless, this survey is, of course, purely subjective, and indicates what the individual thinks about his physical and mental state. The relatively low figures for the 4-year group may be due to three factors: (*a*) They represent a rather younger age group; (*b*) they show more complete mental adjustment; (*c*) possibly a matter of pride, and refusal to admit to impairment after a long spell in adverse circumstances.

Analysis of Effect according to Age

Finally, in order to determine the effect of age on the use of leisure and the mental attitude towards captivity, the sample has been divided into two groups—under 30 and over 30. A sharper contrast would naturally have been provided by an under 30 and over 40 comparison. However, the number of prisoners over 40 is too small to permit this. (See Table III.)

Group I: Under 30	Number 179	Average age 26·4 years
„ II: Over 30	„ 121	„ „ 35·8

Discussion of Table III

The older age group is, not unexpectedly, occupied to a greater extent on administrative and altruistic activities. Comparison of the two groups with regard to study is interesting because of (*a*) the large number of men over 30 who are following courses, and (*b*) the amount of time devoted by this group to study. The older group appears to be slightly ahead on art, music, writing, and dramatics. The figures for light and serious reading are what one would

TABLE III

	Under 30	Over 30
I. Official duties	28 m.	45 m.
II. Altruistic activities	40 m.	55 m.
III. Study: (*a*) Course	(30%) 1 h. 8 m.	(27%) 1 h. 0 m.
(*b*) Language	33 m.	23 m.
(*c*) General	59 m.	50 m.
	2 h. 40 m.	2 h. 13 m.
IV. Handicrafts	18 m.	9 m.
V. Art	5 m.	9 m.
VI. Music: (*a*) Performer	8 m.	10 m.
(*b*) Listener	15 m.	12 m.
VII. Writing: (*a*) Publication	4 m.	5 m.
(*b*) Diary	22%	30%
VIII. Dramatics	2 m.	6 m.
IX. Reading: (*a*) Serious	52 m.	1 h. 16 m.
(*b*) Light	1 h. 11 m.	55 m.
X. Sport: (*a*) Active	1 h. 7 m.	52 m.
(*b*) Spectator	25 m.	20 m.
XI. Indoor games and cards	18 m.	20 m.
XII. Gambling	9 m.	13 m.
XIII. Serious discussion	23 m.	26 m.
XIV. Aimless gossip	1 h. 20 m.	1 h. 10 m.
XV. Sleeping and eating	10 h. 37 m.	10 h. 38 m.
XVI. Fatigues	1 h. 6 m.	1 h. 6 m.
XVII. Hobbies	22%	22%
Unaccounted time	1 h. 52 m.	1 h. 56 m.
	24 h. 0 m.	24 h. 0 m.
XVIII. General interest lectures: Yes	55%	60%
XIX. Work to time-table: Yes	25%	35%
XX. Feeling physically impaired: Yes	32%	39%
XXI. Feeling psychologically impaired: Yes	40%	41%

normally expect. Similarly, the amount of time spent by the younger group on sport is naturally rather higher. That the over 30 group should attend general interest lectures to a greater extent is unexpected; but that they should be more apt to work to a routine is natural. The older age group would feel that they had suffered deterioration physically to a greater extent than the younger. Under any circumstances physical activity would tend to be less over the age of 30. With regard to mental deterioration the two groups are almost equal.

General Conclusions

Under wartime conditions most people are forced to "waste time" in the sense that individual studies and careers are interrupted. The prisoner of war, in this respect, is no worse off than anyone else, except that he has leisure which, although unlimited in time, yet in space is very strictly limited. He utilizes this in activities which may be roughly grouped under three headings.

(*a*) *Work.*—Official and altruistic activities, study and fatigues amounting to about 5 hours a day per head.

(*b*) *Vegetative and—Predominantly—Time-consuming Activities.*—These are represented by: sleeping and eating, gossip, card-playing, and unaccounted time, amounting to about 14½ hours a day per head.

(*c*) *Creative and Recreational.*—Art, music, handicrafts, writing, dramatics, reading, hobbies, sport, and lectures, amounting to about 4½ hours a day.

From this it would be rash to draw general conclusions, but, under P.O.W. conditions, I doubt whether the time spent on creative and recreational activities could be much increased even with unlimited facilities. Apart from reading and sport, the average English education makes no provision for leisure. (Judging from camp activities, the Australian and New Zealand systems follow the English fairly closely.) The North American education is worse in this respect. The 2-year group seem to reflect a high level of specialized education in that there are more university degrees than in the other groups, yet the average time spent in Category C is only 2½ hours per head.

My general impression is that the physical and mental well-being of the P.O.W. largely depends on his daily activities and, of course, conversely. This is rather strikingly illustrated by the case of an ex-schoolmaster who worked conscientiously 6 hours a day for 3 years, passed two difficult exams., and then quite suddenly developed sciatica and polyneuritis, which incapacitated him for further study. Few of the replies were as clear-cut as this. Nevertheless, in replies which devoted most time to vegetative and time-consuming pursuits, there was a greater tendency to admit physical and mental impairment or to complain of symptoms for which an organic basis could not be found. This may represent a "P.O.W. neurosis" similar to the commoner "war neurosis," which, according to Gillespie, arises at a superficial level and will presumably disappear when the conditions causing it are removed.

It is a pleasure to acknowledge the work done by the various branches of the Red Cross and other charitable organizations in providing the necessary facilities to enable P.O.W.s to lead a fairly normal life in captivity. I am indebted to Major G. Hadley, R.A.M.C., and Major E. Parker, R.E., for help and criticism, and to numerous officers in camp for assistance.

SUBSTANCES USED IN TREATMENT OF PEDICULOSIS CAPITIS

THEIR RELATIVE VALUE

BY

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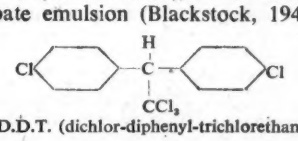
The objects of the investigations here described were to test the efficiency of substances which have recently been recommended for the destruction of head lice and their nits, and to compare these with older methods. The substances were first brought to trial by laboratory tests in which their insecticidal and ovicidal actions were observed under the conditions of controlled bench experiments. They were then tried by direct observation of their effects on subjects kept under controlled clinical conditions. Some of the substances were tried by a third method of attempting infestation in volunteers whose heads had been treated with the test substance.

The newer substances on trial were: (1) 50% lethane 384 special in a white oil (Busvine and Buxton, 1942); (2) 25% technical lauryl thiocyanate in a white oil (Busvine and Buxton, 1942); (3) ascabiol (new formula), a non-irritating preparation of benzyl benzoate emulsion (Blackstock, 1944); (4) emulsion



D.D.T. (dichlor-diphenyl-trichlorethane)

of D.D.T.: 4 parts D.D.T. in (30 parts heavy solevent naphtha +10 parts "amoa A.S.X."). Diluted with water to give 2% D.D.T. This D.D.T. emulsion was supplied by the Ministry of Health for experimental purposes.

The older substances tried for the purpose of comparison were: carbolic acid solution (1 in 40 and 1 in 60), "derbac" soap, 20% solution of dettol, concentrated infusion of quassia, quassia mixture (Jörgensen, 1940), 12.5% formalin soap mixture *B.P.C.* (Ministry of Health Memo., 1940), spirit soap, formalin, 0.1% mercuric chloride in spirit, 0.1% aqueous mercuric chloride, methylated spirits, 3 to 1 mixture of methylated spirits and water, 2% lysol, 2% β-naphthol in spirit, ol. abietis in spirit, oil of cedarwood, oil of citronella, oil of lemon-grass, oil of sassafras, oil of turpentine, paraffin oil, and 5% tar oil.

Laboratory Tests

Laboratory tests are carried out under arranged experimental environments which are to that extent artificial, but they are useful as a preliminary to clinical tests because they demonstrate which of the test substances have no lethal action. These substances can then be discarded as useless and requiring no further clinical test. Laboratory tests are useful also in indicating the manner in which the substances kill the lice. From this the most suitable methods of their application to the hair and scalp can be deduced. For example, a substance may be shown to act through its vapour, and so the best method of applying it (apart from elaborate mechanical devices: Lebailly, 1937) will be by soaking the head with the substance and covering it with a rubber cap to keep the maximum amount of the lethal vapour in contact with the hair. Other substances act directly on the lice, presumably entering their bodies through their external chitinous skeletons. The effect of each insecticide on the nit (or egg) has also to be determined, because if one application of any substance is to be effective it must kill all the nits as well as all the lice. If it does not kill all the nits, larvae will hatch out during 6 to 8 days after treatment, and the state of infestation will continue unless the insecticide persists on the hair and scalp over this period and kills the larvae as they hatch out.

The following is a summary of the laboratory tests used and the results obtained. The lice were taken from infested heads or were bred for the purpose :

Experiment I

The lice were placed on a tuft of cut hair, which was then wrapped in a piece of cotton material soaked in the insecticide and left in position for a period of from 1/2 to 1 hour. The lice were then removed to an observation glass and their behaviour watched for from 4 to 6 hours. It was found necessary to observe them for this length of time to exclude the possibility of sham death or of stupefaction with later survival. This precaution was observed in all the laboratory experiments. The number of lice used for each experiment varied from 5 to 14. According to their results the drugs were divided into three groups: (A) effective—all lice being killed; (B) probably effective—most lice killed, some moribund; (C) ineffective—majority of lice surviving.

The following substances proved to be effective insecticides under the conditions of this experiment and were placed in Group A: D.D.T. emulsion, lethane, lauryl thiocyanate, 2% lysol, sassafras oil, turpentine, methylated spirits, quassia mixture, ol. abietis in spirit, 0.1% mercuric chloride in spirit, 2% β-naphthol in spirit, paraffin oil, and formalin. Less conclusive results were obtained from the use of carbolic acid solution (1 in 40), benzyl benzoate emulsion, 20% dettol, and spirit soap. These were placed in Group B. The remainder of the substances tested were placed in Group C as they proved ineffective. These were: 0.1% mercuric chloride in water, concentrated infusion of quassia, 12.5% formalin soap mixture, oils of cedarwood, lemon grass, and citronella, and 5% tar oil.

Experiment II

Three to five lice on a tuft of hair, and a small watch-glass containing the insecticide to be tested, were placed separately in a covered glass vessel 3½ in. in diameter. The vessel was left at a temperature of 20 to 23° C. for 1 to 1½ hours, and no contact between the lice and insecticide was allowed to take place. The vapours of methylated spirits (and any insecticide containing methylated spirits) and tar oil were effective as insecticides. Some drugs were found to stupefy the lice, which on their removal to fresh air recovered at varying intervals up to 4 hours, even though they looked quite dead when first removed. Carbolic acid (1 in 40), D.D.T. emulsion, 2% lysol, lethane, and oil of sassafras acted in this way. The vapours of lauryl thiocyanate, oil of lemon-grass, and paraffin oil had no effect on the lice.

Experiment III

A tuft of hair was dipped in the insecticide, the excess of which was then dabbed off on a dry cloth. Two or three lice were then applied to the hair and their behaviour observed for 15 minutes.

Of the insecticides tested in this way—lethane, lauryl thiocyanate, sassafras oil, methylated spirits, paraffin, 0.1% mercuric chloride, 1 in 40 carbolic acid, and D.D.T.—lethane alone showed any effect. After 2 to 4 minutes the lice remained quite immobile although intestinal peristalsis continued for 1 to 2 minutes longer. Removal of the lice at this stage was not followed by recovery. This experiment was repeated 8 times with similar results. The amount of test substance left on the hair when it is treated in this way will vary with the viscosity of the substance, and the test is to that extent inaccurate. It is also possible that certain drugs may have a delayed action, and had the lice been observed for a period longer than 15 minutes after exposure to the treated hairs other insecticides would have been found effective. But this experiment does demonstrate that lethane is effective in very small quantities and that it has a rapid action.

Experiment IV

In this experiment the effects of various substances on nits were determined. The nits were obtained from two sources: (1) from the heads of children, the hair with the nit attached being pulled out by the root or cut close to the scalp; (2) from lice kept in a breeding-box. In every experiment untreated nits from the same source as those used in the test were set aside and incubated to act as controls. The nits were immersed for 5 minutes in the insecticides at room temperature and were then transferred to the incubator. From the percentage hatch of the control group and the percentage hatch after treatment, the percentage reduction of hatch was calculated, taking the hatch of the control as 100%. The results are given in Table I.

TABLE I.—*Effects on Nits of Immersion in Insecticide (Experiment IV)*

Treatment	Treated Nits			Control Nits			% Reduction of Hatch
	No.	Hatched	% Hatch	No.	Hatched	% Hatch	
D.D.T. emulsion ..	10	3	30	9	7	78	62*
Lethane	15	5	33	8	6	75	56*
Lauryl thiocyanate	6	6	100	8	6	75	0
Sassafras	8	5	62	10	8	80	23
Methylated spirits	14	8	57	10	8	80	29
2% β-naphthol in spirit ..	9	7	78	7	6	86	9
1 in 40 carbolic acid	10	0	0	8	6	75	100*
1 in 60 carbolic acid	5	0	0	8	6	75	100*
Paraffin oil ..	5	5	100	8	6	75	0
2% lysol	12	0	0	12	7	58	100*

* Statistically significant in that the difference is greater than twice the standard error.

Summary of Results of Laboratory Tests

From the results of these experiments it is seen that many substances are lethal to the louse, but the insecticide with the quickest and most reliable action is lethane. In Experiment III the rapid action of lethane is very striking as compared with other insecticides. Methylated spirits and tar oil seem to act by their vapours. Many insecticides dissolved in or mixed with methylated spirits owe their insecticidal action to the spirits. Treatment with these agents should be carried out in such a way that the vapour has a chance to take effect, preferably by the use of a rubber cap. From the results of Experiment IV, lysol and carbolic acid solution appear to be the most effective ovicides. D.D.T. emulsion and lethane are moderately effective ovicides, but the other substances tested in this way are unreliable. The ovicidal action of D.D.T. emulsion is probably due to the other ingredients in the emulsion (Busvine, personal communication).

Controlled Clinical Tests

The object of these experiments is to test the lethal action of various drugs on the louse and on the nit, under conditions which are natural but controlled, so far as is possible, to allow comparisons to be drawn between the different reagents. This method of investigation gives results which are of more value than those obtained by laboratory experiments because the drugs are tested under natural conditions.

The method used to determine the lethal action on the louse was the application of the test substance to a head in which a known number of lice were present. The head was carefully toothcombed 12 to 18 hours after treatment and the condition of the lice noted—dead, moribund, or apparently healthy. To determine the lethal action of the test substance on the nits a comparison was made between the hatching rates of the nits before and after treatment in the following way:

Before treatment was started, hairs with nits attached were pulled out by the roots or cut close to the scalp. Each nit was examined with a hand lens, and if the operculum was broken off or the nit appeared empty it was discarded. Ten to twenty full nits with intact opercula were placed in a container in the incubator to determine the hatching rate before treatment was given. These acted as controls. In exactly the same manner 10 to 20 full nits were removed 24 hours after the application of the substance under trial, and they were incubated under the same conditions as the control nits. Both lots of nits were examined 10 days after they were put in the incubator. By counting the number of full and empty nits the hatching rate was determined. From these figures the percentage reduction of hatch was calculated and a comparison of the effects of the different substances on the nits could then be made. Further control of the drug's ovicidal action was made by daily toothcombing for 10 days and by examination of the combing with a hand lens. The results obtained in these experiments are shown in Table II.

Discussion

Although the number of cases used for each controlled clinical experiment varies and in some instances is small the results are clear enough to enable one to draw certain conclusions, which further observations of the field-trial type will confirm or refute.

First, with regard to the *lethal action on the louse* the following substances have proved effective: lethane, 100 cases; 2% lysol, 6 cases; oil of sassafras, 6 cases; paraffin oil, 4 cases; 5% tar in oil, 4 cases; methylated spirits, 6 cases; ascabiol, 10 cases; D.D.T., 10 cases. Derbac soap and dettol solution were included in the experiments because so many mothers were found to have used them on their children. Both are quite ineffective. The formalin soap mixture (M.O.H. Memo., 1940) is also unreliable. Carbolic solution was successful in some but not all cases, and lauryl thiocyanate was unsatisfactory in the 6 cases in which it was used.

Secondly, the *ovicidal action* of these substances is of interest. Judged by the purely experimental results of their effe

on the hatching rate of the nits, lysol and methylated spirits have the most efficient lethal action. Ascabiol, sassafras oil, carbolic acid, and turpentine come next in order of efficiency. If the substances are classed according to the results of toothcombing a different order is obtained. This is due to the property of lethane, and particularly of D.D.T., of persisting on the hair and scalp and killing the larvae as they hatch out (see below). Ascabiol, although it produced fairly satisfactory results, did not "have a solvent action on the cement of the nit," nor was "simple washing with soap and water sufficient to remove all remaining nits," as claimed by Blackstock (1944).

TABLE II.—*Results of Controlled Clinical Experiments*

Treatment	Method	Effect on Lice	Effect on Nits			Control Nits			% Reduction of Hatch	Results of Toothcombing
			No. of Nits	No. which Hatched	% Hatch	No.	No. which Hatched	% Hatch		
Ascabiol	Approx. 2 oz. applied with brush to scalp and hair	All killed	20	2	10	20	19	95	89*	Very occasional larvae
1 in 60 carbolic acid ..	Wet hair thoroughly; apply compress 8 hours	Not all dead	10	3	30	10	10	100	70*	Larvae
Derbac soap	According to directions	No effect	26	16	61	22	12	55	0	Abundant larvae
D.D.T. emulsion ..	4–5 teaspoonfuls applied to scalp and rubbed in	All killed	20	15	75	15	14	93	19	Nil
1 in 20 dettol solution	Wet hair thoroughly; compress applied 6 hours	No effect	12	5	58	14	9	64	9	Abundant larvae
Formalin soap mixture	According to directions	Not all killed	21	11	52	13	9	69	25	Several larvae
Lauryl thiocyanate ..	2–3 dr. by spray or pipette; applied to scalp	,,	20	11	55	20	16	80	31	Larvae
Lethane	,, ,,	All killed	20	6	30	20	12	60	50*	A few larvae
2% lysol	Wet hair thoroughly; compress applied 8 hours	,,	9	0	0	10	9	90	100*	,, ,,
75% methylated spirits	,, ,,	,,	13	0	0	17	9	47	100*	Very few larvae
Paraffin oil	,, ,,	,,	8	3	37	7	5	71	48	A few larvae
Oil of sassafras ..	,, ,,	,,	31	4	13	27	25	93	86*	Occasional larvae
5% tar in oil	2 oz. applied to scalp and hair	,,	7	2	30	5	3	60	50	A very few larvae
Turpentine	2–3 dr. applied to scalp; rubbed in	Not all killed	10	2	20	11	7	64	69*	Several larvae

* Statistically significant in that the difference is greater than twice the standard error.

Its results were obtained by its ovicidal action, 80 to 90% of the nits being killed. With careful toothcombing, a greater number of nits are removed after treatment with ascabiol than with other agents, such as methylated spirits and carbolic acid. Ascabiol appears to have a slight lubricant effect, but in no instance was it found to be an "easy method of freeing the scalp from nits."

The relative inefficacy of the other substances as ovicides should be sufficient to remove them from the extensive list of therapeutic agents which have long been advocated for the treatment of pediculosis.

The Protective Action

The third method was that of attempting infestation of heads of volunteers after treatment with the test substances. Methylated spirits, lysol, ascabiol, D.D.T. emulsion, and lethane hair-oil were tested in this manner. Of these substances, only D.D.T. and lethane persisted in the hair and were able to continue their lethal action for more than 24 hours. Three or four lice were applied to the hair 24 hours after treatment and the head was toothcombed the following day. Recovery of lice was taken as evidence that the test substance did not possess any protective properties. Recovery of dead lice or failure of recovery after careful toothcombing was taken as evidence of protection. When protection occurred, healthy lice were again applied and the head toothcombed the following day. This was continued until living lice were recovered.

One application of lethane was found to protect the head for from 4 to 6 days in 6 subjects, the length of protection varying from case to case according to the extent to which the oil was rubbed off on the pillow and also possibly to slight difference of technique. Washing of the hair removes the lethane and thus destroys its protective action. One application of D.D.T. emulsion protects the head for from 14 to 18 days if the hair is not washed after treatment, and for from 11 to 15 days if washing is carried out. Eight cases treated with D.D.T. emulsion were tested in this way. In 4 cases the head was washed 1 to 3 days after D.D.T. emulsion had been applied.

The discrepancy between the relatively weak ovicidal action of lethane and D.D.T. and the results of toothcombing is explained by the persistence of these substances in the hair or on the scalp in an active state for 4 to 6 days and for 14 to 18 days respectively. Those nits that escape being killed give rise to larvae which stand a poor chance of survival, as they must come into contact with the insecticide on the hairs near the scalp and on the scalp itself when they go there to feed. This point emphasizes the importance of the method of applying the agent—viz., it should be rubbed into the scalp and the hair near the scalp, where the lice go to feed. The fact that in heads treated with lethane a few first-stage larvae often appear from the 5th to the 8th day, confirms the observation that its lethal action does not persist for more than 5 to 6 days. Every case so far treated with D.D.T. emulsion has been cured by one application. This result is to be expected, as the duration of protection with D.D.T. exceeds the incubation period of the nits (6 to 8 days).

Conclusions

The ideal substance for treating pediculosis is one which kills all the lice and all the nits immediately, or, failing that, one which kills all the lice immediately and which persists in the hair during the incubation period of the nits so that it kills off the larvae as they hatch out. No drug has been found which will kill all the nits in the hair on one application. It is difficult to apply a substance in sufficient concenfration to affect every nit without damaging the scalp or adjacent skin. 2% lysol is the agent which is most effective on the nits, and in this concentration it is safe to use. Ascabiol, sassafras oil, and carbolic acid solution come next in order of efficiency, but in practice none of these ovicides gives a 100% kill.

Among the substances tested, the nearest approach to an ideal is D.D.T. emulsion, which kills all the lice and persists in the hair long enough to kill all the larvae. Lethane has a similar action but does not persist so long, and some larvae which hatch towards the end of the first week after treatment may survive. D.D.T. emulsion has other advantages over lethane hair-oil. Its smell, which is not unpleasant, quickly disappears and the hair looks natural after treatment. If desired, the hair can be washed, as D.D.T. is insoluble in water, and the washing does not appreciably affect its action. Lethane has an unpleasant, persistent smell; it gives the hair a greasy appearance, and the head must not be washed for 10 days. No toxic reaction or irritation of the scalp or skin has been noted after the use of lethane hair-oil or of D.D.T. emulsion.

Summary

A series of laboratory and clinical tests is described in which an attempt is made to compare the efficiency of a number of "cures" for pediculosis capitis. Some of the substances in common use are shown to be either ineffective or definitely inferior as insecticides and as ovicides. Any success obtained by their use can be ascribed largely to the mechanical removal of the lice by the careful toothcombing which is usually an important part of the treatment.

D.D.T. emulsion and lethane hair-oil stand out as the two insecticides of value in the treatment of pediculosis. D.D.T. is

preferable to lethane because one treatment properly carried out should cure every case. This substance will not, however, be available till after the war. Lethane will cure a large proportion of cases with one application, but two treatments at a week's interval will give certain cure. In order to obtain good results the details of the application of lethane should be carefully observed. Two or three teaspoonfuls of the oil are used for one treatment. The hair is parted, and 2 or 3 drops from the teaspoon or pipette are dripped on to the scalp. This is repeated in from 12 to 20 different areas all over the scalp. With the finger-tips the scalp is vigorously rubbed for two minutes to ensure equal distribution of the oil. Any oil which trickles down the forehead or behind the ears should be wiped off with cotton-wool and vaseline applied.

The following substances proved ineffective in the treatment of pediculosis: 20% solution of dettol, derbac soap, concentrated infusion of quassia, 12.5% formalin soap mixture (M.O.H. Memo., 1940), 0.1% aqueous solution of mercuric chloride, oils of cedarwood, citronella, and lemon-grass, and lauryl thiocyanate.

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LOCAL EFFECTS OF INTRAMUSCULAR INJECTION OF SOLVOCHIN*

BY

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Solvochin is a soluble preparation of quinine, designed for intramuscular injection and supplied by the Camden Chemical Co. Ltd. According to Cooke and Wingfield (1944), 2 c.cm. contains 7½ gr. of quinine base together with phenazone. The reaction is *p*H 7.2. It has been recommended by Cooke and Wingfield (1944) and others for the treatment of malaria, on the ground that intramuscular injection is painless; some hundreds of injections were given by these observers without any serious complication, although a tender inflammatory induration was once noted.

The present investigation was undertaken to study the action of this preparation upon the tissues at the site of injection and to compare it with those of mepacrine and of quinine dihydrochloride (Hawking, 1943, 1944). The technique was the same as that used in the previous studies. The solution in the ampoule of solvochin was diluted with sterile isotonic saline, 1 c.cm. being made up to 7.5 c.cm., so that 0.5 c.cm. contained 16.3 mg. of quinine base. This corresponded to 20 mg. quinine dihydrochloride in 0.5 c.cm. injected during previous studies (Hawking, 1944). Injections were made intramuscularly into the thighs and loins of rabbits and also subcutaneously on the abdominal wall. Altogether 14 intramuscular injections were made and 4 subcutaneous ones. Two control injections with 0.5 c.cm. normal saline were also made intramuscularly; no sign of local injury due to these control injections was found. The animals were killed after 1 to 8 days. The site of injection was inspected macroscopically, and pieces of tissue were fixed in formol-saline and studied by the usual histological methods, staining with haematoxylin and eosin and with haematoxylin and van Gieson.

Results

Macroscopic Appearances.—In the muscles of the *loin* there was a dark-red fusiform mass (necrosis) with a narrow yellow border (leucocytic reaction); typical dimensions were 3 cm. by 0.9 cm. by 0.6 cm. In the *thigh* the picture was more varied. In some cases there was a dark-red mass 2 by 1 by 0.8 cm. lying longitudinally in the surface of the muscles along the sciatic nerve; in other cases there were small punctate haemorrhages, or the surface of the muscles appeared whitish and roughened. The muscles of the rabbit's thigh are divided by many planes of loose connective tissue, and solutions injected into the thigh are usually distributed along these planes, *between* the muscles rather than inside them. In the loin the muscles form a compact mass, and solutions injected are confined to the interior of the muscle. At the site of *subcutaneous* injection there was no macroscopic evidence of tissue reaction.

Histological Appearances.—In the *loin* there was an area of coagulative necrosis with variable amounts of haemorrhage as described above. At the margin of this area there was a fairly thin zone (1 to 2 mm.) of leucocytic reaction. On the first day after injection many of the leucocytes were polymorphs, and fibrinous fluid was sometimes present; after 5 to 8 days most of the leucocytes were large mononuclears, and granulation tissue with fibroblasts was present. After 8 days some of the necrotic muscle fibres were becoming calcified. In the *thigh* the amount of necrosis was variable. In some slides there were long areas of necrosis and haemorrhage as described above. In others the necrosis was limited to the superficial layers (2 to 6 fibres deep) on the surface of the muscles. Adjacent muscle fibres were shrunken and basophilic. The neighbouring connective tissue was moderately distended with fluid and lightly infiltrated by leucocytes. After 8 days granulation tissue was present. In the *skin* there was necrosis of the subcutaneous layer of muscle for a short distance, and in one case there was necrosis of the epithelium over a small area. The adjacent connective tissue showed a little fluid and a few leucocytes (small round cells).

Discussion

The lesions produced by the injection of solvochin containing 16.3 mg. of quinine base were indistinguishable in extent from those caused by the injection of a corresponding amount of quinine dihydrochloride, as seen in the previous study (Hawking, 1944).

Summary

Solvochin was injected intramuscularly and subcutaneously into rabbits. Necrosis of the muscle was caused at the site of injection. The lesions were indistinguishable in character and extent from those caused by the injection of a corresponding amount of quinine dihydrochloride.

Acknowledgments are due to the Camden Chemical Co. Ltd. for kindly supplying the solvochin used, and to Mr. F. J. Higginson for the histological preparations.

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* A report to the Malaria Committee of the Medical Research Council.

Medical Memoranda

Foreign Body in Lung for Thirty-one Years

This case is published not only for its own interest but to reinforce a plea for the more frequent use of the bronchoscope in diagnosing intrathoracic lesions. The passage of a bronchoscope involves comparatively little disturbance to the patient and can almost invariably be done under local analgesia. The presence of even gross sepsis is therefore no contraindication.

CASE REPORT

A man aged 67 was admitted to the West Norfolk and King's Lynn General Hospital under Dr. Holmes Watkins on Oct. 27, 1943. There was a history of old tuberculosis of the lung, but he had been quite well for many years. On Sept. 22 he began vomiting dark fluid, and a barium meal showed a large atonic stomach, but no evidence of ulcer or neoplasm. Screening of the chest revealed what appeared to be a cavity at the right base, and a skiagram showed a large patch of pneumonitis there. A profuse purulent sputum grew *Str. viridans*, pneumococci, and *Micrococcus catarrhalis*. No tubercle bacilli were seen.

On Nov. 3, at Dr. Watkins's request, I undertook a bronchoscopy. Premedication was by omnopon and scopolamine, and in addition he was given an amethocaine hydrochloride pastille to suck 20 minutes beforehand. Under cocaine analgesia the bronchoscope passed quite easily, and when it entered the right bronchus a well of pus was seen. This was aspirated and a dark foreign body was seen lying across the bronchus about 4 cm. down from the bifurcation of the trachea. It was removed without great difficulty and found to be about three-quarters of an inch of the vulcanite mouthpiece of a pipe.

Questioned subsequently, the patient recollected an accident in 1912, when he fell from his bicycle and his pipe was broken in his

mouth. His palate was lacerated at the time but healed well, and he had never thought any more about it. Unfortunately, infection in the lung spread rapidly, and he died on Nov. 15.

The astonishing thing is that a foreign body of this size could have remained blocking the bronchus for 31 years without giving rise to serious trouble. It is possible that this may be due to the fact that the airway through the centre of the vulcanite had remained patent and that he was therefore able to get enough air backwards and forwards through it to ventilate his lung. Careful examination of the vulcanite showed no corrosion or disintegration at all.

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Recurrent Dislocation of Ankle due to Rupture of External Lateral Ligament

It is still a fact that many cases of recurrent dislocation of the ankle due to a rupture of the external lateral ligament pass undiagnosed and untreated. Such a case usually presents itself with a history of a recent sprain. On examination the ankle is swollen, bruised, and painful. However, on questioning, the patient admits having had previous sprains of varying severity. On the other hand, the case may present itself with a history of recurring slight sprains and a general feeling of weakness in the ankle-joint.

The outstanding fact in the history of a case of ruptured external lateral ligament is an original injury of some severity. Further examination of the ankle does not elicit any more inversion than is found in a normally sprained ankle without a ruptured external ligament. Straight radiographs, both lateral and antero-posterior, show no evidence of the ruptured ligament. For this to be demonstrated the muscle spasm has to be relieved by an injection of novocain on the outer aspect of the joint. The result is as shown in the accompanying radiograph (Fig. 1).

A Suggested Operation

The only treatment for an ankle with a rupture of the external lateral ligament is operation. The following technique was devised by me.

At operation the old rupture is quite apparent. The ligament is repaired by splitting the tendon of the peroneus longus from above downwards. The detached end is then threaded through the external malleolus and through the os calcis (Fig. 2). The value of this method is that it is easy to perform and that it reconstitutes the ligament. At the same time no muscle is damaged, as the remaining half of the tendon hypertrophies.

FIG. 1

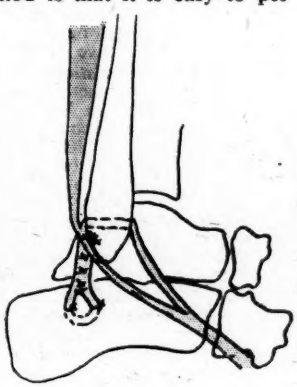

FIG. 2

FIG. 1.—Radiograph showing dislocation of the astragalus.
FIG. 2.—Diagram showing half of the peroneus longus tendon threaded through the external malleolus and the os calcis, and back again on itself.

The radiograph shown is that of a patient upon whom I operated. When first seen she was aged 32. On examination she had what appeared to be a severe sprain or a fractured ankle. Her history, however, revealed that this occurred every few months. She also clearly remembered a severe sprain as a child. This undoubtedly was the time that the ligament was ruptured. Operation revealed the old tear of the ligament. The patient has had no further trouble since the operation.

I should like to thank Mr. A. T. Fripp, F.R.C.S., as it was while assisting him at one of his cases that I devised this operation.

E. HAMBLY, M.B., B.S., F.R.C.S.,
Surgeon, E.M.S. Royal National Orthopaedic Hospital.

Reviews

SOCIAL WORK FOR THE TUBERCULOUS

Social Work for the Tuberculous—A Practical Guide. By Harley Williams, M.D., and Irene Harbert. (Pp. 153. 5s.) London: National Association for the Prevention of Tuberculosis.

The presentation of information on social work, in any of its many forms, in a concise and readable manner, is a difficult task, and that side of it devoted to tuberculosis is no exception to the rule. The authors of this book are therefore to be congratulated on having produced a valuable guide containing a storehouse of useful knowledge in so small a compass as 153 pages. The title of the book is a little ambiguous, but the subject-matter is for the most part a clear and well-constructed summary of the management of the tuberculous patient in his home and gives an excellent account of the assistance which is available under Memorandum 266T and the help provided by care committees. It is agreed that "if its principles and ideals are grasped the care worker will be more confident in her own judgment."

In detail, however, there are some points which need correcting and revision. Where the book touches on clinical matter there is a certain degree of confusion, and in some places it gives rather misleading information. For instance, a positive skin test does not always mean there has been contact with an open case of pulmonary tuberculosis: it may result from drinking infected milk. It would have been useful to have more information on the subject of pensions and the help given by the British Legion in this direction. There is a tendency to draw a too optimistic picture of the assistance which the tuberculous patient will receive under the Ministry of Labour and National Service rehabilitation scheme, and there is little guide as to the employment of the "open case" except in the village settlements. Certain paragraphs will no doubt be redrafted in future editions, for this book will be helpful to social workers for many years to come.

A useful index to agencies for personal aid is given at the end of the book as well as a general index. The well-defined and clear fount of type makes the text easy and pleasant to read without fatigue.

INDUSTRIAL OPHTHALMOLOGY

Industrial Ophthalmology. By Hedwig S. Kuhn, M.D. (Pp. 294; illustrated. 32s. 6d.) London: Henry Kimpton. 1944.

Industrial ophthalmology is not synonymous with a study of industrial eye injuries any more than ophthalmology in general is merely the study of the causes of blindness. Different occupations require different degrees of visual acuity, stereopsis, muscle balance, adequate illumination, and capacity for quick visual judgments. Furthermore, different industries involve varying degrees of ocular fatigue, and danger of damage from mechanical or toxic factors. The conditions under which some industrial processes have to be carried out may be so trying that special measures are needed to enable the worker to see clearly and comfortably for prolonged periods. Studies on these and kindred aspects have appeared in the periodical press and in monographs, but there is no systematic survey of industrial ophthalmology as a whole. It is perhaps also no exaggeration to say that there is as yet no comprehensive formulation of the problems.

The appearance of Dr. Hedwig Kuhn's *Industrial Ophthalmology* is therefore a welcome portent, for here at last is an attempt to survey the field as a whole. The numerous photographs of factories, workrooms, and machines, and of workers concentrated on particular tasks are in themselves a substantial contribution to the formulation of the problems of industrial ophthalmology. Incidentally they also show how much has been done in isolated factories, here and there, to meet some of the problems. The chapter devoted to eye protection shows forcibly enough that this is not merely a matter of goggles; like all general remedies goggles tend to conceal more dangers than they have overcome. The introductory chapter, with its stress on the need for tests to eliminate those who are visually unfit for particular tasks, is particularly illuminating; to most ophthalmologists the whole concept and

its application will prove distinctly new. The chapter on visual skills is an excellent essay on the adaptation of workers to their jobs. Even at this stage in the development of industrial ophthalmology it is clear that, as distinct from an encyclopaedic knowledge of the details of various industrial processes, there are certain general principles that are applicable throughout industry and readily adapted. To have shown this is a substantial achievement for a pioneer effort in the writing of a textbook on a new subject. Dr. Kuhn's book in addition contains a mass of detailed information, and there are particularly useful sections on toxic hazards and on danger from radiant energy. It is regrettable that the high achievement of this book is marred by the inclusion of a considerable amount of irrelevant and ill-balanced information, and by a style that lapses alternately into purple passages and sheer slang.

THE SICK AFRICAN NATIVE

The Sick African. A Clinical Study. By M. Gelfand, M.B., Ch.B., M.R.C.P., D.M.R. (Pp. 372; illustrated. 25s.) Capetown: The Post-Graduate Press in association with the Stewart Printing Co., Ltd. 1944.

Most textbooks on tropical medicine in describing diseases in the Tropics consider these mainly from the point of view of the European who is merely a visitor in a foreign land. Only those diseases which are not found in his own country—the so-called tropical diseases—are dealt with, while those which are common to both tropical and temperate countries receive little consideration. In *The Sick African* the author deals almost entirely with the native, and considers the European only in so far as his susceptibility and response to certain diseases differ from those of the African.

The native is a very different person from the European. He has little or no education, is under the influence of the witch doctor, and is always afraid of offending the spirits of his ancestors. He is fatalistic, and is often reluctant to consult a white man about his symptoms. When he does so it is with difficulty that he is persuaded to carry out a long course of treatment, for immediately his symptoms abate, though cure has not been effected, he will leave hospital and not return for further advice or observation. On this account treatment must be as rapid as possible, even though it is understood that this is not entirely satisfactory. The solution of many of these difficulties, in the author's opinion, is the African-trained native doctor, who understands the native mentality and speaks his language as no European can ever hope to do. All these and many other aspects of medical practice among Africans are discussed in the two introductory chapters of the book. There follow others on malaria, bilharziasis, hookworm disease, leprosy, yaws, and the many other conditions to which the native is liable. It is noted that he far more commonly suffers from those diseases which occur in temperate climates than he does from those that are purely tropical. Dr. Gelfand has had a wide experience of native practice, and the advice he gives as to the methods of handling and treating the native will be invaluable to all who find themselves in the position of having to carry on this kind of work.

As Col. A. P. Martin says in his foreword, this is a book which in an outstanding manner meets the needs of all workers in the African field of tropical medicine.

LIP-READING AND DEAF AIDS

Lip-reading and Hearing Aids. By Irene R. Ewing, M.Sc. Second edition. (Pp. 73. 4s. 6d.) Manchester: The University Press. 1944.

It has long been known that deaf children acquire the art of lip-reading with comparative facility and require relatively little teaching, while for adults the process is more difficult, and it has been said sometimes to be impossible. The services of Mrs. Irene Ewing to the deaf are well known, and one of them is the compilation of this little book, which describes the nature and scope of lip-reading and the correct approach to the problems of both teaching it and learning it. The difficulties are seen from the sides of both teacher and pupil. The importance of combining lip-reading with the use of a proper hearing aid, so that the use of one sense organ reinforces the activity of the other, is established, and Mrs. Ewing shows that by following her methods the assumption that adults cannot learn lip-reading is ill founded. Those who are becoming deaf or have suddenly become deaf and are determined to make a serious effort to overcome the disability will find not only that this little book is of great assistance but also that it brings a message of needed encouragement and hope. The methods described are not intended for children.

Notes on Books

Messrs. E. and S. Livingstone of Teviot Place, Edinburgh, have published a third edition of Miss LOIS OAKES'S *Illustrations of Bandaging and First Aid*, which received praise in these columns on its first and second appearances. It is a very useful introduction to the art of bandaging and is likely to fill for long to come a niche in first-aid literature. The material has been revised for the new edition and several new features added—for example, a section on how to "blanket" a stretcher, how to lift and lower a patient, and how to remove an unconscious person from a smoke-filled room. An addition is four pages of coloured pictures entitled "Typical War Wounds," taken from Mr. Hamilton Bailey's book *Surgery of Modern Warfare*. The volume is very freely and clearly illustrated throughout. Its price remains at 6s., postage in this country 6d. extra.

Preparations and Appliances

A CHEAP AND EFFECTIVE SUBSTITUTE FOR UNNA'S PASTE

Lieut. J. J. WILD, R.A.M.C., writes:

In 1943, faced with the shortage of elastic bandages and a large number of chronic ulcers of the leg, mainly varicose requiring out-patient treatment, I decided that a substitute for Unna's paste must be found. With the kind co-operation of Mr. Soulsby, the pharmacist at North Middlesex County Hospital, a preparation was evolved which not only fulfilled this purpose, but has proved superior to Unna's paste in two ways at least, namely: (1) No heating is required before application. (2) Low cost and easy availability.

The Preparation.—The basis of the preparation is methyl cellulose, a water-soluble tragacanth substitute. This goes under various trade names. The product used by me was "W.F.Z.," supplied by Imperial Chemical Industries, Ltd. (South-Eastern Division, Dyestuffs Section), Belmont, The Ridgeway, Mill Hill, N.W.1. This is a commercial grade of methyl cellulose, and contains traces of heavy metals so that it is unsuitable for internal administration or topical application to open wounds. Nevertheless, bearing these points in mind constantly, I have found that it is harmless to the intact skin.

Details of Preparation.—"Cellofas W.F.Z.," described as a technical grade of methyl cellulose, is a cream-coloured fibrous cellulosic material. In low concentration in water it has the property of forming a viscous solution, which dries slowly in air, giving a celluloid-like film which redissolves in water. The current cost is 2s. 10½d. a lb. The substitute is easily prepared by taking 95 parts of water and 5 parts of W.F.Z. Leave overnight, stir thoroughly, and then adjust the proportion to 3% with water. Add 20% of zinc oxide and stir well. No doubt lighter concentrations, such as 5% W.F.Z. and 30% zinc oxide, could be used, but this would not pour and would give a stiffer paste. W.F.Z. is not an antiseptic, and will support growth of fungi. For this reason it has always been freshly prepared for my use. No attempt has been made to sterilize the preparation as it does not come into contact with the open lesions. But should this be thought necessary, autoclaving should not affect it.

Method of Use.—The preparation is applied cold on to a wet bandage with a brush, and layers of wet bandage are impregnated with it as for Unna's paste. The final bandage is a dry one and serves to protect the patient's clothing. Drying occurs in a few hours, and the patient is instructed to moisten the dressing if it gets too hard. This procedure is rarely necessary. About four layers of bandage are usually enough.

Clinical Applications.—(1) Varicose ulcers: All ulcerated areas and vulnerable skin are covered with lint after applying the required dressing; then the supportive dressing is applied. (2) Thrombophlebitis: Used as a supportive bandage. (3) For lower limbs after plaster-cast immobilization: I used the preparation for this purpose, in preference to adhesive elastic supportive bandages, for eight months at the Miller General Hospital, Greenwich; no skin reactions were observed. (4) As an occlusive dressing in suspected dermatitis artefacta.

The preparation has been in constant use at the North Middlesex County Hospital for two years, without trouble. The paste is entirely satisfactory, and, bearing in mind the high cost of Unna's paste and the need for economy in glycerin and gelatin at this time, it is gratifying how efficient a substitute this preparation has proved. It might even be deemed to have superseded Unna's paste.

My thanks are due to Mr. Soulsby, the pharmacist, to Sister Peers, and her nursing staff at the hospital for their willing co-operation in evolving this preparation.

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TREATMENT OF INFECTIVE HEPATITIS

Function and structure in the liver of experimental animals can be profoundly modified by diet. If an excess of fat is given the liver first becomes fatty and later undergoes a diffuse fibrosis of the portal type.[1] Presumably the accumulation of fat interferes with the activities of the cells. The evil effect of fat can be prevented by the so-called lipotropic factors, which promote the transfer of fat from the liver to the depots. Choline and methionine are the most important of these. Choline is a component of lecithin, while methionine is one of the essential amino-acids; it contains sulphur and also has some chemical affinity with choline. If the proportion of protein in the diet is greatly reduced more critical and dramatic changes may occur in the liver, similar to those of acute and sub-acute necrosis in man.[2] After a latent period the necrosis occurs abruptly and is often fatal. It can be prevented by methionine but not by choline. Finally it has been shown that in dogs which have been depleted of protein the resistance to hepatic poisons is impaired. Miller and Whipple[3] have shown that if these protein-depleted dogs are given methionine shortly before chloroform anaesthesia they will be protected from poisoning. A combination of choline and the sulphur-containing amino-acid, cysteine, has a similar effect, but not choline alone. Protection can be given up to 4 hours after the anaesthetic, but not later. Very similar results have been obtained in neo-arsphenamine poisoning. Two points must be made about the relation between protein metabolism and liver poisons. The first is that the favourable effect of protein supplements or thio-amino-acids has been observed only in animals which had been depleted of protein; there is no evidence that they are of value in animals which have been receiving an abundance of protein. The second point is that the effect is purely prophylactic, and that a superabundance of proteins and amino-acids has not been shown to be of value in the treatment of experimental animals with hepatitis. In fact the reverse is the case. Bollman and his collaborators[4] have shown that if the dog's liver is damaged by ligating the common bile-duct or by administering a daily dose of carbon tetrachloride, a high-protein regimen is actively harmful and accelerates the development of ascites and hepatic insufficiency. In another series of experiments,[5] in which rats were subjected to repeated exposure to carbon tetrachloride, the average duration of survival on a normal mixed diet was represented by the figure 100; the duration of survival on high-carbohydrate, high-protein, and high-fat diets was found to be equivalent to 205, 104, and 59 respectively.

It is appropriate to consider the bearing of this experimental work on the treatment of infective hepatitis and allied conditions in man. There is enough evidence to suggest that in the recent epidemics of jaundice in the Mediterranean theatre of operations and elsewhere the relative incidence has been much lower in native troops, but the relative mortality has been higher; the difference in mortality may well be due to the prophylactic value of the higher protein content of the diet of white troops. In treatment there has been a tendency to increase the protein as well as the carbohydrate in the diet at the expense of the fat, but it cannot be said that any convincing evidence has been obtained to justify such a break with tradition. Beattie[6] has claimed that the average time spent in hospital in a large series of patients with acute hepatic dysfunction is inversely proportional to the protein intake. As the appetite is inversely proportional to the severity of the illness, this may be only another way of saying that the duration of stay in hospital is directly proportional to the severity of the illness. Beattie also speaks favourably of the value of casein digests, cystine, methionine, and choline, but he indicates that, owing to the great variability of infective hepatitis, it would be impossible to prove a statistical effect from these supplements without very large numbers of cases. Turner and co-workers,[7] whose experience is based on over 4,000 cases of homologous serum jaundice, state bluntly that methionine and choline failed to yield beneficial results. Richardson,[8] in a small series of cases of infective hepatitis not yet published, has failed to demonstrate any effect with choline. Peters and co-workers[9] have observed no more than a slight benefit from cysteine and methionine in the treatment of post-arsenical jaundice. It is important to realize the conditions of this trial. Mild cases of jaundice and patients jaundiced for more than 14 days were excluded from the analysis, so that only 150 out of a total of 468 patients were left in the trial. The duration of illness in the methionine-treated cases averaged 20 days, as compared with 26 days for the controls, and there was considerable individual variation. So small an effect in so carefully chosen a group may be statistically significant and yet remain clinically insignificant. In the present number of the *Journal* we are publishing details of therapeutic trials of methionine in infective hepatitis by groups of workers at Cambridge and Oxford. In these two series there were 68 treated cases and 68 controls. The conclusion is reached that treatment with methionine has no significant effect on the severity or duration of infective hepatitis or the incidence of relapses. It may be pertinent at this point to reflect on the cost of treatment with methionine. In a recent price list of fine chemicals methionine was quoted at 7s. per gramme. The daily dose is 5 grammes, and the average duration of treatment 14 days. This would work out at

[1] McHenry, E. W., and Patterson, J. M., *Physiol. Rev.*, 1944, **24**, 128.
[2] Glynn, L. E., and Himsworth, H. P., *J. Path. Bact.*, 1944, **56**, 297.
[3] *J. exp. Med.*, 1942, **76**, 421.
[4] *Ann. intern. Med.*, 1938, **12**, 1.
[5] *J. Amer. med. Ass.*, 1943, **121**, 1413.
[6] Royal Coll. Surg. England, Scientific Report, 1943–4. See also articles in *British Medical Journal*, 1944, **1**, 209; and **2**, 651, 847.
[7] *Ann. intern. Med.*, 1944, **20**, 193.
[8] Richardson, J. S., unpublished.
[9] *Quart. J. Med.*, 1945, in publication.

nearly £25 per patient, and the cost would be unlikely to be reduced more than 50% by large-scale production, as the synthesis of methionine is difficult. Moreover, more methionine might mean less mepacrine and less D.D.T. Finally, it would appear that methionine may have an important place in the treatment of burns[10] and exfoliative dermatitis.[11] In the present phase of scarcity, therefore, there can be little excuse for recommending methionine in the treatment of jaundice.

What, then, are the indications for treatment in infective hepatitis? The first is rest in bed, which should be continued until the liver is no longer tender and the urine is free from bile, preferably by the delicate Hunter reaction. The routine diet should be high in carbohydrate, low in fat, and high in proteins. The emphasis should be on the carbohydrate, and fat should not be reduced to a level at which the food becomes dry and unpalatable. Palatability of the diet and avoidance of undernutrition are indeed primary factors in the treatment of a disease in which loss of appetite is the leading symptom, and Turner came to the sobering conclusion that patients who were allowed to choose their own diet did at least as well as, and in some instances perhaps better than, the average. Fresh milk is often well taken; the cream which separates on standing can be removed, though this is not absolutely necessary. Dried milk is often rejected. Fruit drinks ensure a large intake of fluid, carbohydrate, and vitamin C. Regularity and frequency of food intake are probably of greater importance than exactness in the composition of the diet, and Turner believes that if patients were given an infusion of glucose for each meal avoided or vomited some disasters might be obviated. Routine treatment with dextrose and insulin,[12] however, is of no advantage, and the same appears to be true of extra vitamins, calcium salts, and liver extract. There is a suggestion that both liver extract and plasma may produce unpleasant reactions. In conclusion, it would seem that infective hepatitis provides one more example of the care that must be taken in applying knowledge gained in the field of nutrition to the treatment of infective disease.

[10] Croft, P. B., and Peters, R. A., *Lancet*, 1945, **1**, 266.
[11] Peters, B. A., ibid., 1945, **1**, 264.
[12] Lenz, O., *Acta med. scand.*, 1944, **116**, 447.

THE ABUSE OF REST

One of the things which most impressed the medical visitor to the United States twenty years ago was the sight of young women sitting about the lounges of the hotels in Rochester, Minnesota, five days after their thyroid glands had been resected for toxic goitre. The idea that a thyrotoxic patient should be kept in bed for weeks or months had been so deeply ingrained that it was a shock to find the rule broken with apparent impunity. Pressure on beds at the Mayo Clinic was heavy in those days, and now that pressure on beds is everywhere heavy the value of rest is being questioned in every field of therapeutics. A recent symposium in the *Journal of the American Medical Association* speaks roundly of the abuse of rest and the evil sequels of recumbency. Rest is blamed for bone atrophy, muscular wasting, vasomotor instability, constipation, cathartic habituation, backache, and many other chronic disabilities. In later life it favours the onset of bladder trouble, pulmonary oedema, and uraemia. Harrison[1] points out that John Hunter and Sir James Mackenzie suffered from angina pectoris, and their hearts bore the scars of cardiac infarcts at necropsy; yet both men worked hard for some twenty years after the beginning of cardiac symptoms and probably ten years after serious cardiac infarction. Yet neither ever remained in bed for any long period of time. Harrison argues that there is no proof that rest in bed, carried out for many weeks after symptoms have disappeared, is of value in the physical management of the patient with congestive failure, angina pectoris, or myocardial infarction. He brings evidence from animal experiments to suggest that nowadays we confine the patient to bed needlessly long after a coronary thrombosis, and hints that this may even favour a second thrombosis or a pulmonary embolus. Harrison's views did not go without challenge. It all depends on what you mean by rest, as Dr. C. E. M. Joad would say. There is general condemnation of strict recumbency, particularly when it is enforced by sedation and punctuated by periods of violent exertion on the bed-pan; but not even "global war" can alter the fact that the rate of metabolism and the work of the heart are diminished by rest. Levine[2] is undoubtedly right when he points out that strict bed rest in heart failure may bring about pulmonary congestion from redistribution of blood and oedema fluid, and pulmonary embolism from the thrombi which form in the stagnant blood in the legs when the calf veins are compressed in the horizontal position. These risks can be diminished by a modicum of activity and the use of a chair until oedema and congestion have been relieved by appropriate medication. But in advising that rest need not be prescribed for a longer period than two or three weeks after the more acute and alarming symptoms of a coronary thrombosis have subsided Harrison perhaps overstates the case. Both in coronary thrombosis and in acute rheumatism the majority of physicians would feel it wise to keep their patients at rest until the inflammatory process has subsided, though this need not mean strict recumbency, and the use of the commode need not be forbidden. It is difficult to defend any arbitrary period of confinement to bed, and treatment should be suited to the individual on the basis of the severity of the attack and the course of the fever, the leucocyte count, and the erythrocyte sedimentation rate.

The value of rest in pregnancy and after confinement is a fruitful topic of debate, and in both this country and America there are numerous advocates of a reduction in the lying-in period. This is not a simple problem, for it is linked up with the establishment of lactation and the psychology of motherhood. It will be generally agreed, however, that rest and regular hours of infant feeding can sometimes be too dearly bought; mother and child are reciprocal parts of the family whose integration in the

[1] *J. Amer. med. Ass.*, 1944, **125**, 1075.
[2] Ibid., 1944, **126**, 80.

puerperium is no less important than the involution of the uterus. Convalescence from a surgical operation is a simpler problem, and Powers[3] presents some striking figures for 100 consecutive patients who were allowed to sit in a chair and to walk on the first day after major operations. He indicates that local complications such as the breakdown of wounds or hernia are actually less common in these circumstances, while the remote complications of operation are greatly reduced. The patient is not "deconditioned," as he is by prolonged rest in bed, and the return to work is accelerated. In orthopaedic surgery the aim has long been to localize rest as sharply as possible and avoid general immobilization, and anyone who has seen the work of our new accident services will have been surprised by the short time in which patients are able to get about in comfort after fractured skulls or disabling injuries. Menninger[4] concludes the series of articles with an amusing criticism of the Weir-Mitchell treatment and of similar measures whereby it is hoped to cure psychological illness by rest cures, relaxation treatments, or holiday trips. "The things that disturb people are not what they hear on the radio: they are what is in their hearts." In psychological breakdown due to exposure to prodigious stress, such as occurs in battle casualties, prompt and complete rest is indeed of enormous benefit, and it must be secured by heavy sedation. But when men break down under conditions of peace they do so from the turning inward of aggressive tendencies, and they require not rest but mental reorientation, physical exertion, and the directed use of muscles to prevent the accumulation of this self-destructive energy.

This American symposium is written under the influence of wartime shortages of beds and doctors, and some of it has a flavour of special pleading. Nevertheless it should be of value in making us question customary procedures, particularly in hospital practice. In recent years a number of these traditional procedures have been revised. The ritual purgation of patients[5] is no longer condoned, and the patient with a haematemesis is fed. Morphine is regarded as one of the best drugs for renal dyspnoea, instead of being frowned on, as in the past. A hospital is now known to be a dangerous place for a small infant, and it may be equally bad for the old and feeble, who never again pick up the thread of activity once they have let it drop. Absolute rest gained a well-deserved reputation in tuberculosis, but it may be a veritable bed of Procrustes if it is applied to every form of serious illness. Whenever we put a patient to bed we should ask ourselves what we hope to achieve; and it must be something more than a tidy ward, a convenience for examination, or a substitute for a convalescent room. The folly of treating obesity in bed, or of balancing the diet and insulin in a diabetic under conditions of complete rest, is only too common a sight in hospital wards. In every illness, too, we should ask ourselves how the individual patient reacts to rest in bed. For many it is a sheer delight, but for others it is a tedious ordeal which produces a continual mental strain and is much less restful than a discreet amount of activity.

[3] *J. Amer. med. Ass.*, 1944, **125**, 1079.
[4] Ibid., p. 1087.
[5] Witts, L. J., *Lancet*, 1937, **1**, 427.

ENCEPHALITIS IN RUBELLA AND MEASLES

As it is often difficult to distinguish atypical rubella from scarlet fever and measles, particularly in the adult, it is as well to be chary of attributing severe complications to the mildest of these three infectious diseases—rubella. But they nevertheless occur in some outbreaks. Polyarthritis, for example, was a feature of rubella in the early days of the present war. A much rarer complication is damage to the nervous system. Bénard's[1] experience of this must be unique, for he encountered no fewer than 13 cases with meningeal symptoms among 291 soldiers treated for rubella in a Versailles military hospital. Reviewing 36 recorded cases of meningo-encephalitis following rubella, Falger[2] notes that 22 were in adults, and, in all, 8 patients died. His own patient, a woman of 26, began with a mild attack of rubella, fell into a deep coma on the eighth day after the eruption, and died within 24 hours. Many of the recorded cases have been mild, and it appears that the complication is either rapidly fatal or clears up completely.

The encephalitis of measles is a more serious matter. Post-mortem examination of the brain in rubella encephalitis shows that the type of reaction is inflammatory; a degenerative, demyelinating process is seen in post-vaccinal and measles encephalitis. The fatality rate for measles encephalitis is high, but varies from epidemic to epidemic. In a follow-up study of recovered cases Litvak and his colleagues[3] found permanent changes in 22 out of 32 (69%)—a proportion approximating to the 65% already recorded by Ford.[4] The permanent manifestations were as varied as the acute stage, but it is interesting to note that, in patients observed over many years, neurological disorders faded gradually and were replaced by disorders of behaviour. In the large New York epidemic reviewed by Litvak only 1 in 1,300 cases of measles developed encephalitis—an incidence considered to be unusually high. The exact cause is still in doubt. The common view is that the histological changes are caused by toxins from a systemic virus infection, and are not the result of a direct attack by the virus. Even if the encephalitis were due to the virus of measles it still remains unlikely that measles serum would have any effect on virus fixed to nerve tissue. In practice the results of even large intravenous doses of convalescent measles serum have been unconvincing, although Mitman[5] noted a rapid response to the intravenous injection of 20 c.cm. of serum obtained from a patient convalescing from measles encephalitis. Until it has been shown beyond doubt that measles serum is useless the physician in charge of a case will feel inclined to give the patient the benefit of the doubt and inject serum when the signs of encephalitis appear. No sulphonamide compound has any action in measles other than on secondary invaders such as haemolytic streptococci and pneumococci. The initial phase of the disease is not influenced by sulphonamides, nor, it appears, is measles encephalitis.

[1] *Bull. Mém. Soc. méd. Hôp. Paris*, 1921, **45**, 1443.
[2] *Acta med. scand.*, 1944, **118**, 282.
[3] *Amer. J. Dis. Child.*, 1943, **65**, 265.
[4] *Johns Hopk. Hosp. Bull.*, 1928, **43**, 140.
[5] *Lancet*, 1937, **1**, 687.

THE HOSPITAL ALMONER

Not long ago the principal function of the hospital almoner was regarded as assessing how much a hospital patient might be expected to pay for his maintenance. Sir William Beveridge, in an address to the Institute of Hospital Almoners the other day, said that he himself had had that same notion until later he learned that the almoner fulfilled a much wider medico-sociological purpose. Her job was that of "helping people, both through the best use of their own capabilities and through the resources of

the family and the community, to overcome personal and social difficulties and to achieve the fullest possible measure of health and independence." New personal problems constantly arose in sickness which could be solved only by personal help of this kind, and therefore, in addition to what was provided from the medical and nursing side, the work of the almoner had its own distinctive scope and importance. He mentioned that when preparing his report he interviewed a group of almoners and asked them whether, if the financial assessment side of their work were taken away, it would make an enormous difference to their duties, and he was assured that what they believed to be their most important duties would remain. Even the earlier notion of the almoner's role had its value, for the financial assessment was designed to ensure that no one went without necessary hospital treatment owing to lack of means. There were, however, better ways of bringing about the same result. One of them was represented by hospital contributory schemes; but still more to be preferred, in his view, was a universal and compulsory system of insurance and a provision such as the Government contemplated in the White Paper. The criticism had often been urged against such schemes that they discouraged personal initiative. But the material benefits proposed in his report were only the minimum provision, and ample room was left for individual effort to obtain more than the minimum. The whole idea of giving people social security, said Sir William Beveridge, was to free them from material anxiety so that what were sometimes called the things of the spirit might be cultivated. There were those who said that in seeking to ensure material security for all he was taking a low aim. His reply was that, on the contrary, the low aim was taken by those who supposed that unless people were afraid of starvation they would sit down and do nothing.

RESEARCH AT THE PHARMACEUTICAL SOCIETY

The annual report of the College of the Pharmaceutical Society for 1944 is of considerable interest. Work which has begun under Prof. H. Berry on an antiseptic for Gram-negative organisms has made a promising start. It is generally known that we now have in penicillin, the sulphonamides, proflavine, and other recently introduced antibacterial substances a means of ridding wounds from Gram-positive cocci, anthrax, and the gas-gangrene organisms. Hitherto, however, there has been no means of removing *Ps. pyocyanea* and *Proteus vulgaris*. Prof. Berry has found that β-phenoxyethyl alcohol, which he calls "phenoxyetol," is active against *Ps. pyocyanea* in a concentration of 0.4%. Since this substance can be mixed with penicillin and does not interfere with the action of penicillin (or of the sulphonamides or proflavine) phenoxyetol can be used in conjunction with penicillin. Clinical trials have been undertaken. Phenoxyetol is a liquid which does not affect the unbroken skin, and its antibacterial action is not diminished by serum. It was first tried by Dr. J. Gough for tuberculous cavities secondarily infected with *Ps. pyocyanea*, in a 2.2% aqueous solution. This has also been used for burns and superficial wounds. Daily applications eliminate *Ps. pyocyanea* in some cases and reduce their numbers in others; when that micro-organism is eliminated clinical improvement occurs even though staphylococci increase. Phenoxyetol incorporated (2%) in penicillin cream keeps the cream sterile during its use in the wards by killing air-borne organisms which produce a penicillinase. Moreover, the cream kills *Ps. pyocyanea* as well as organisms sensitive to penicillin.

The other direction in which striking progress is being made is in the study of the release of the cortical hormone from the suprarenal glands. The beginning of this work, which is carried out by Dr. Marthe Vogt, was described in last year's report. It has now been shown that the intravenous infusion of adrenaline stimulates the suprarenal cortex, and that this effect is obtained with doses of adrenaline which may be liberated in the body when the splanchnic nerves are stimulated. Within a few minutes of the beginning of an adrenaline infusion the output of cortical hormone rises to several times its resting value, and remains there for some time after the adrenaline infusion stops. Dr. Vogt has shown that this effect of adrenaline is a direct action on the cortical tissue and is likely to be related to the large rise in the oxygen consumption of the suprarenal gland which occurs when adrenaline is injected. We have here the clue to the relation between the suprarenal medulla and cortex, which has been a puzzle for 70 years. Although the cortical hormones are the centre of interest in many laboratories in America because of their great importance in the body, hitherto progress has been confined to the chemistry of these hormones, their action when injected, and their excretion. This advance in knowledge of their liberation in the blood is in a new direction by methods of great technical difficulty on which Dr. Vogt is to be warmly congratulated.

UNITED FRONT FOR MENTAL HEALTH

A provisional National Council for Mental Health was formed in the early part of 1943 to take over the work of the Mental Health Emergency Committee and to continue the activities of the Central Association for Mental Welfare, the Child Guidance Council, and the National Council for Mental Hygiene. It is hoped that before this year is much older the amalgamation will be completed. Meanwhile this partly amalgamated body, as its first report indicates, has carried on a many-sided work. It has set up facilities for mental health training for medical officers and other professional workers such as teachers and health visitors. It has paid close attention to the subject of education of the parent. Under its auspices the services of educational psychologists have been lent to local education authorities and others. Information has been disseminated on the setting up of child guidance clinics, of which, at the date of this report, there were 47 in England and Wales with full staffs, and 18 others under medical direction but without a fully qualified psychologist or psychiatric social worker. The social case work department, which is concerned with children under guardianship, mental defectives, maladjusted children, and others, dealt with over 3,000 cases during the year. The council is also responsible for 13 homes of different types, such as emergency homes for mental defectives and agricultural hostels. These last, which are for men on licence from certified institutions, have proved one of the most successful experiments in the community care of mental defectives. There have been some failures in adjustment, of course, but far more successes. It is added that during this early period of amalgamation into the National Council each of the several bodies has learned to understand and appreciate what the others are doing, and the varied experience which each has brought has increased the vitality, widened the horizon, and heightened the value of the work as a whole.

We announce with much regret that Sir Thomas Lewis, M.D., F.R.S., died on March 17 at Rickmansworth. Last December the Presidents of the Royal Society and of the Royal College of Physicians awarded him the Conway Evans Prize in recognition of his great contribution to medical knowledge on the normal and abnormal mechanisms of the heart and the circulation of the blood.

COAL AND ATMOSPHERIC POLLUTION

Dr. A. Parker, Director of Fuel Research under the Department of Scientific and Industrial Research, in a Chadwick Lecture at the London School of Hygiene on coal in relation to atmospheric pollution, said that estimates made before the war put damage to health, buildings, materials, and agriculture in Great Britain by smoke, sulphur, ash, or grit, arising from the use of coal, at not less than fifty million pounds a year. Though it was not possible to prevent pollution entirely, methods were available under which considerable reduction could be achieved. He emphasized, however, that progress would have to be gradual if the demands for various fuels were not to overstep the supply, and there must be a suitable balance if our resources of the different types of coal were to be used to the best advantage.

Efficient Use of Fuel

The wider use of efficient methods for cleaning coal at the colliery before it reached the consumer would reduce the amount of ash, dirt, and sulphur in the coal or coke and the amount of grit carried to the atmosphere. A reduction of pollution would result from more efficient use of fuel because less fuel would be burnt. Efficiency figures showed that there was much room for improvement which could only be achieved in reasonable time by well-planned scientific investigation and technical development, combined with intelligent and skilled operation.

On the domestic side, under ordinary household conditions, the overall efficiency of the open coal-fire was not more than about 20%. The corresponding figure for the general purpose appliances in which coal was used for space heating, provision of hot water, and cooking was somewhat greater because of the heat taken up by the water, but it was probably not more than 25%. Much effort was now being expended in designing open fires to provide not only radiant heat but also convected heat from air heated by passage through ducts adjacent to the fire, the warm air being discharged into other rooms. With systems of this kind the average householder might get an efficiency of 30% in place of 20% with the ordinary open fire. The idea was not new, but the problem was to design a fire not too costly to make and instal and very simple to operate. Dr. Parker estimated that as an overall figure it was unlikely that efficiency in the use of the 60 million tons of coal we burnt for industrial purposes exceeded 50%.

Smoke and Grit in Furnace Gases

With large modern boiler installations equipped with mechanical stokers, little or no smoke need be produced; but such installations with forced draught carried appreciable quantities of ash or grit into the chimney gases. In some instances the grit had caused considerable nuisance in the locality of the boiler house. Most of this grit could be removed from the chimney gases by efficient grit-catchers such as had been installed at the largest electricity generating stations. At certain of the larger electricity power stations in thickly populated areas coals containing not more than 1% of sulphur were chosen for firing the boiler furnaces. In addition, these power stations were equipped for the operation of processes which removed most of the oxides of sulphur from the chimney gases before discharge to the atmosphere. But these processes of treatment to remove sulphurous gases, however, were not easily operated and were expensive. Some efficient but cheaper method was needed to reduce the quantity of oxides of sulphur discharged, suitable not only for the largest but also for smaller boiler installations. It had not been possible in the past, with the large numbers of hand-fired boilers at numerous industrial works, to avoid the emission of smoke, particularly for a time after stoking. Extensive work by the Fuel Research Station during the last few years had developed equipment to modify the doors of marine and Lancashire boilers whereby the emission of smoke could be practically eliminated. This gave, at the right time and in the right way, the extra air required to burn the smoky volatile matter evolved from the fresh coal for the necessary period after stoking.

Pollution from Domestic Fires

The domestic open fire gave out more smoke per ton of coal burned than any other appliance in general use; and about half of the smoke pollution arose from domestic appliances, though they consumed less than a quarter of the total coal used. There were designs of open fire which would reduce the amount of smoke to about a half of that with the open fire of usual type, but they had not yet been tried out in general use by the average householder. Emission of smoke during the early stages of burning up after lighting seemed to be unavoidable. With open fire-grates of suitable design there was no difficulty in satisfactorily burning coke, provided that the coke was in pieces of suitable size.

Substitution of gas for solid fuel would avoid pollution by smoke and grit and would reduce pollution by sulphurous gases to a negligible amount. The use of electricity in place of solid fuel avoided the emission of smoke, but would not prevent pollution by grit and sulphurous gases unless the generating stations were equipped to remove the grit and sulphur from the chimney gases In general, however, gas and electricity were too expensive for continuous heating in the average house, but they had advantages for short-period intermittent heating and for cooking. In respect of domestic appliances it would seem that encouragement should be given to the use of coke, gas, and electricity in place of coal, so far as was economically practicable, if atmospheric pollution was to be greatly reduced.

COMMITTEE ON REMUNERATION OF GENERAL PRACTITIONERS

The committee recently set up under the chairmanship of Sir Will Spens by the Minister of Health and the Secretary of State for Scotland to advise on the range of total professional income of a registered medical practitioner in any publicly organized service of general medical practice is inviting evidence from the organizations directly interested. The committee will, however, be prepared to receive evidence from interested bodies or persons other than those specially invited. It is requested that those wishing to place their views before the committee should submit memoranda to the Joint Secretaries of the Committee, Ministry of Health, Whitehall, London, S.W.1, before the end of April.

Some reference to the B.M.A.'s procedure for collecting the evidence it proposes to place before the committee will be found in the *Supplement* this week at page 43.

AWARDS TO CIVIL DEFENCE M.O.s

The *London Gazette* has announced the appointment as M.B.E. (Civil Division) of Dr. BALDEV SAHAI KAUSHAL, medical officer, mobile unit, Civil Defence Casualty Service, Dr. JAMES LEITCH KEIR LAWSON, medical officer, light mobile unit, C.D. Casualty Service, Dr. HERBERT STANLEY KNIGHT and Dr. CHARLES HARVEY BATEMAN, medical officers, C.D. First-aid Service, and Dr. WILLIAM THOMAS GARTHORPE BOUL, officer-in-charge, C.D. Casualty Service. DAVID JAMES, staff officer, ALFRED DANDY, BENJAMIN ANDREW GARWOOD, and FREDERICK MARSHALL, party leaders, C.D. Rescue Service, have been awarded the B.E.M. The citations read as follows:

Dr. Kaushal has served with the Civil Defence since the beginning of the war and on more than one occasion has entered confined spaces in dangerous debris in order to give aid to a casualty. When a bomb dropped in the gardens in front of his house he sustained injuries which caused him to lose consciousness. After some minutes he recovered and it was possible to get him into an ambulance. On hearing, however, that there was a person under the debris he refused to go to hospital and attended to the casualty, giving an injection of morphine. He would not leave the site until he was assured that all casualties were cleared. Dr. Kaushal has shown courage and devotion to duty and has been the means of saving many lives.

Dr. Knight has been out on duty at a very considerable number of incidents caused by enemy action, encouraging everyone by his coolness and cheeriness, and inspiring them by his efficiency and perseverance. Dr. Knight has always been ready to tackle any job, no matter how difficult. He has climbed up into partly demolished premises, down into debris-filled basements, and has crawled through tunnels to render first aid and to succour the injured. At one incident, which took nearly 27 hours to clear up, Dr. Knight stood by the whole night and showed great fortitude in remaining until all the casualties were brought out. Dr. Knight has shown courage, devotion to duty, and tenacity of purpose.

Dr. Lawson's courage and constant and expeditious attendance at air-raid incidents during a period of over four years has set a very high example of devotion to duty. On one occasion he was told that a woman with serious injuries had been released from under debris and was lying on the first floor of a wrecked building. The two upper floors of the premises had been shattered by blast, leaving the roof and attic floor overhanging in an unsupported position. Dr. Lawson immediately obtained a ladder and, without thought for his own safety, crawled through a small aperture in the wreckage and gave morphine injections to the casualty.

Houses were demolished by enemy action and people were buried in the debris. Dr. Bateman and Mr. James worked almost continuously in very dangerous circumstances under the wreckage, James directing the rescue operations which enabled the doctor to attend to the trapped casualties. Although the wall above was in danger of collapsing on them, they tunnelled 12 feet into the wreckage to reach a trapped woman crushed by the debris. The doctor remained to give her injections and looked after her until she was released. Dr. Bateman and James showed courage and determination and saved the life of the casualty.

Four people were trapped under the debris of houses which had been demolished by enemy action. Garwood directed rescue operations in a very skilful manner. After tunnelling into the debris and locating the casualties, he set to work to free them. Working for 45 minutes in a confined space, close to a smouldering fire, he managed to rescue two of the victims. To prevent his collapse, he then had to be relieved, much against his wishes. Dandy then went into the tunnel and, by jacking up the debris, was able to enlarge the space. He worked with extreme skill and care and rescued a boy and attempted to rescue a man who was in an extremely difficult position. By this time Dandy had been working for approximately 40 minutes and was ordered to leave the cavity and come out for a rest. Marshall, relieving Dandy in the excavation, endeavoured to enlarge the cavity by working with additional jacks. He cut away timbers and floor joists, and removed a block of masonry which was holding down the casualty across the legs, by carefully breaking it to pieces with hammer and chisel. The man was rescued after two hours. Dr. Boul very courageously burrowed down under the wreckage with Garwood to render medical attention and remained under the debris until the last casualty was extricated. During this period he sustained the male victim who was lying face downwards almost in the fireplace, in which there was a fire smouldering, his legs being trapped by masses of masonry and timber. Dr. Boul supported him in this position throughout the two hours taken to carry out the rescue, subject all the time to falling debris and the danger of shifting wreckage.

Reports of Societies

EXFOLIATION OF BLADDER LINING

At the February meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland the PRESIDENT gave an account of complete exfoliation of the epithelial lining of the bladder in a patient aged 38 years. She had been married four years, and had had one previous pregnancy, which ended in abortion at 8 weeks in 1941.

On admission the patient appeared gravely ill, with a rapid weak pulse. There was a history of retention of urine with overflow for 14 days, and constipation for 21 days. The abdomen was distended and tender. Her last regular menstrual period had been in July (four months before admission), but her history was not very reliable. She had had some further vaginal haemorrhage in August. At the time of admission she had been bleeding slightly per vaginam for some four days, and was in great pain. About an hour later she gave birth to a foetus whose age was estimated at about 4½ months' gestation. The placenta followed rapidly. Bimanual examination disclosed a large solid mass filling the true pelvis and extending above it into the abdominal cavity. The cervix uteri was displaced upwards and backwards. The case was considered to be one in which a pregnancy had occurred in a large myomatous uterus. Subsequent events proved this diagnosis wrong. A catheter was passed and 14 oz. of foul bloody urine were withdrawn. A self-retaining catheter was introduced and left *in situ* for seven days. Her blood urea was 203 mg. per 100 c.cm. of blood. Her urinary output from the time of the introduction of the catheter was maintained between 40 oz. and 70 oz. a day. Her blood urea had fallen to 34 mg. per 100 c.cm. Progress was satisfactory after removal of the self-retaining catheter: occasional urinary stoppages were relieved by catheter. Three weeks after admission she complained of severe pain, and a dark-grey mass about 1½ in. thick protruded from the urethra, coming away easily with traction. It was a large portion of the epithelial lining of the bladder. After passage of this cast she was incontinent, but two months later had regained some control. Cystoscopic examination showed that not more than 1½ oz. of water could be retained in the bladder, which appeared to be lined with granulated tissue and bled very easily. Later examination showed some epithelial lining to be present. Bimanual vaginal examination disclosed a uterus normal in size; no evidence of tumour.

Dr. J. F. CUNNINGHAM said the condition was rare now, but used to occur more frequently. It occurred only in association with pregnancy. There was a gradual obliteration of the urethra, causing bladder distension with ischaemia and sloughing of the epithelial lining. Later, the bladder could be stretched so that normal function could be recovered.

Dr. J. S. QUIN did not consider the condition was confined to pregnancy, nor did he agree with Dr. Cunningham that it was one of ischaemia, but rather one of acute infection of the bladder.

ARRHENOBLASTOMATA

The North of England Obstetrical and Gynaecological Society met on Jan. 19 for the first time since the outbreak of war. Prof. FARQUHAR MURRAY of Newcastle, the retiring president, introduced the new president, Dr. A. A. GEMMELL of Liverpool.

Dr. C. P. BRENTNALL described a case of arrhenoblastoma of the ovary associated with pregnancy and labour.

There were no undue symptoms until the woman reached the fourth month of pregnancy, when evidence of virilism began to appear; masculine distribution of hair appeared on the abdomen, chest, and face; the voice became deeper and the clitoris enlarged. There were none of the usual defeminizing phenomena: the breasts, instead of atrophying, showed the usual changes associated with pregnancy, and the amenorrhoea of pregnancy could not be described as defeminizing. Glycosuria was constantly present—probably another case of the Achard-Tiers syndrome. The woman was delivered by Caesarean section, and the ovarian tumour removed under local analgesia. Lactation began and continued normally. The phenomena of virilism disappeared in six months after operation, except for the deeper voice. The child appeared to be normal except for the external genital organs. There was no doubt that she was a female pseudo-hermaphrodite. The clitoris was much enlarged, the labia majora were enlarged and corrugated. There were no labia minora, and no external entrance to the vagina. The urethral orifice was situated at the base of the clitoris, and the perineum extended unbroken to the anus. On the fourth day of life there came from the urethra the discharge of blood and mucus which is not uncommon from the vagina of newborn girls, and this was taken as a proof of the presence of a normal uterus. The methods of Nature and the laboratory in administering androgens to pregnant mammals were discussed. In this particular case it appeared, from evidence in the mother and child, that androgen from the ovarian tumour reached the child in effective quantity during the third month of foetal life, and resulted in the partial masculinization of the external genitalia.

Dr. J. W. A. HUNTER described a case of arrhenoblastoma of the ovary.

The patient was a single girl aged 19. Her periods had begun at 11 years and were regular until she was about 15. At that time her voice became deep and her abdomen enlarged. Nine months later menstruation ceased and the breasts were reduced in size. Eighteen months after this hair appeared on the face, legs, and chest. She came to hospital because of the very marked increase in size of the abdomen. A hard tumour could be felt, reaching nearly to the xiphisternum. There was free fluid in the abdomen, and at the time of her admission to hospital she had a pleural effusion. A large tumour with an enormous blood supply was found when laparotomy was performed. It was removed with great difficulty. No metastases were seen. The patient's condition while in hospital was never good, and in spite of blood transfusion she died about 12 hours after the operation. Points of interest were the very large size for arrhenoblastoma, and its enormous adventitious blood supply.

Dr. J. W. BRIDE described another case of arrhenoblastoma of an immature type.

The patient was single, aged 32. She complained of menorrhagia for five or six months. Examination showed hirsutism, especially of the face, necessitating daily shaving. Intellect dull. There was a masculine distribution of hair on the abdomen. A hard mobile mass was palpable in the abdomen. The clitoris was greatly hypertrophied. Laparotomy showed a solid ovarian tumour about the size of a foetal head, and this was removed. Two years later the clitoris was much smaller, the hair on the face was much less, and she was only needing to shave once or twice a week. Her general health was good.

Adreno-genital Syndromes

Dr. A. A. GEMMELL described a case of adreno-genital syndrome due to bilateral cortical hyperplasia of the adrenals.

The patient came complaining of primary amenorrhoea and some abnormality of the vulval region. She was of male configuration with no breast development, but had no facial hirsuties. Her voice was of female timbre and she had a normal feminine outlook. On examination under anaesthesia on April 26, 1944, the phallus was found to be 2 in. long, and no other abnormality was apparent. On May 5 Dr. Hain of Edinburgh estimated the ketosteroids as 35 mg. per 24 hours, and pregnanediol as 60 mg. per 24 hours. In June these had increased to 74 mg. of ketosteroids and 73 mg. of pregnanediol. On June 6 Mr. C. A. Wells amputated the phallus, and laparotomy was performed. The uterus was small and the ovaries appeared normal. Biopsy of the right ovary showed atretic and normal immature follicles and two large follicles and one with both granulosa and theca layers. Both adrenals were enlarged. A diagnosis of congenital bilateral suprarenal hypertrophy was made, and on the 27th Mr. Wells removed the left suprarenal by the transcostal route. It appeared elliptical in shape, and measured 3.5 in. by 2 in. by 0.5 in. It weighed 23 grammes after fixation. Vines's stain showed an androgenic reaction. There were no fuchsinophil cells in the outer zone. In the midzone 25% of the cells gave a positive stain, and less than 25% in the inner zone. The ketosteroid and pregnanediol levels fell to 32 and 31.5 mg. on estimation; they had risen again by Jan. 3. In December last menstruation had still not occurred, and there had been no enlargement of the uterus and no change in voice.

Mr. T. N. A. JEFFCOATE described a case of adreno-genital syndrome due to an adenoma of the adrenal cortex.

The patient was a single woman, aged 30, complaining of primary amenorrhoea, and growth of hair on the cheeks, chin, and upper lip. The hirsuties had been present for 16 years, having gradually developed soon after the age of 14. She had a deep voice and a muscular and masculine figure with male distribution of hair. The breasts were undeveloped, and the nipples deeply pigmented. There were slight hypertrophy of the clitoris and a septate vagina

with a hypoplastic cervix. Psychologically she was mainly feminine, interested in clothes and babies; sexually she was neutral. At laparotomy a tiny infantile uterus was found. The ovaries were pale, with numerous tiny cysts due to atretic follicles. Biopsy was performed to confirm that the glands were ovarian. The left suprarenal was felt to be larger than the right and appeared spherical. The patient recovered from the operation and later a ketosteroid secretion test was performed. The result of 140 mg. per 24 hours was the final link in the chain of evidence. Mr. C. A. Wells of Liverpool agreed to explore the left adrenal through the left loin three weeks after laparotomy. In the upper pole of the gland he found a rounded tumour which shelled out easily; and this was removed together with a small portion of normal tissue. About half the adrenal was left behind. The tumour, roughly ovoid in shape, was 2 in. in diameter, greenish purple in colour, dull red on section, owing to considerable extravasation of blood. Microscopically it was seen to be composed of cells recognizable as of adrenal origin. They showed a strong positive reaction to Vines's stain. Although at the time it was suggested by the pathologist that the tumour was of a low grade of malignancy, the patient was alive and well 2½ years later. The results of the removal were classical. Eight weeks after operation the patient menstruated for the first time, and had done so regularly since them. The uterus had grown to about normal adult size. After 2½ years the voice was unchanged, the clitoris unchanged, the breasts enlarged, and the skin of finer texture. The figure was slightly more feminine. The hair did not drop out dramatically as was often described, but was slowly becoming more feminine in distribution, and after electrolysis was showing diminished tendency to return. The ketosteroid excretion within one month of operation had dropped to 3 mg. in 24 hours. Psychologically she had become slightly more feminine, more modest, and less self-conscious.

The Whipps Cross Hospital Medical Society held a clinical meeting on March 9. The successful results obtained from the use of penicillin were demonstrated in a number of patients, including a case of interlobar empyema treated by aspiration and local application of penicillin, a cured case of staphylococcal septicaemia, an air-raid casualty who had sustained a ruptured liver, and a case of meningitis. A number of pathological specimens were also shown. The next meeting will be held on April 6 at 8.30 p.m., when Dr. Stanley White will show a film entitled "Sex Hormones: Physiology, Diagnosis, and Treatment."

The annual general meeting of the Society of Public Analysts and Other Analytical Chemists held on March 9 at Burlington House, London, marked the seventieth anniversary of the Society. It was reported that in the past year the usual activities had been maintained, the financial position remained very satisfactory, the membership had increased by 117 to 1,197, and the circulation of the Society's journal, the *Analyst*, in spite of paper restriction, had increased. There had also been important developments. In pursuance of the policy decided upon a year ago, the Society had formed, within the framework of its constitution, two groups concerned with particular branches of analysis—viz., the Microchemistry Group (chairman, Prof. H. V. A. Briscoe) and the Physical Methods Group (chairman, Mr. R. C. Chirnside). These groups will hold meetings from time to time in London and elsewhere. The proceedings ended with the presidential address of the retiring president, Mr. S. Ernest Melling, who, after reviewing some of the outstanding events of the past year in the Society's affairs, made some observations on the subject of water and water supplies. The address will be published in the *Analyst*.

Advisory Councils of Industrial Health are a recent development and are composed of members of employers' organizations, trades unions, and the medical profession. The object is to promote industrial health in the area concerned, making suitable reports and recommendations when indicated. The intention is for such a council to act as a single body, and not as an association of three types of representatives. The first such council was formed in Leeds two years ago. Another one was set up in Derby in March, 1944, and a further one in Burton-on-Trent in September, 1944. A joint meeting of these three councils was recently held in Derby, and representatives were invited from neighbouring towns where such councils are contemplated—Sheffield, Birmingham, Coventry, and Grantham taking part. Each of the existing councils described the work done and future work contemplated. Co-ordination and liaison between all such councils was arranged, and it was decided that the next joint conference be held in Derby in May, 1946. It is evident that the number of such councils will increase considerably, and that it will be only a matter of time before it is a national movement.

Correspondence

Estimation of Heat Radiation in Clinical Practice

SIR,—The article on "Estimation of Heat Radiation in Clinical Practice" by Drs. D. S. Evans and K. Mendelssohn (Dec. 23, 1944, p. 811) is important because it is in essence a plea for better scientific measurement of all physical radiations allowed to reach the body. The old adage, "To measure is to know," surely holds good in the case of radiant heat and infra-red, as in the case of *x* rays or radium or other physical influences brought to bear upon patients.

There is, however, one point that is overlooked in this article which is of considerable clinical importance, and that is, that the great majority of cases treated by infra-red or radiant heat have interposed between their skins and the source of heat either a single piece of lint or a sheet or towel. It would have been of great interest to have known what difference in wavelength is effected by such a procedure.

The majority of patients that attend at my rheumatic clinics have been treated during part of their illness by radiant heat and massage or infra-red and massage. In a small percentage of these cases the patient asserts that considerable benefit was derived; but there is never any evidence of any clinical details of technique, as to how the radiant heat or infra-red was given.

That radiant heat or infra-red can be potent for harm has been shown decisively during the war in the treatment of shock and similar conditions. In a survey of a number of Air Force stations receiving wounded, crashed, and shocked patients, there was unanimity of opinion that a very small quantity of radiant heat did good, that it did more good when the patient was treated in his flying clothes, and that if the radiant heat was left on for any length of time its effect was rapidly harmful. It would seem that the patient's clothes prevented any considerable quantity of ray energy reaching the body; and the short time enabled the clothing to be warmed without becoming a source of radiating energy. As a result, the body-envelope of air is heated by conduction and convection.

On the strength of these observations the R.A.F. Electro-Medical Research Unit developed a means of conveying air slowly and smoothly at varying temperatures, free from direct radiation, to the patient, so that he can be subjected to a simple form of air conditioning.

Investigations are proceeding on these lines. In the meantime a warm welcome should be given to every effort to make accurate measurements of physiotherapy methods when applied to the body.—I am, etc.,

London, W.1. C. B. HEALD.

Ovariotomy or Caesarean Section?

SIR,—Prof. S. J. Cameron (March 3, p. 307) has invited opinions from his colleagues on their methods of dealing with ovarian cysts in pregnancy. Here is the experience and practice of one whose opportunities must have fallen far short of his own. First the experience: (1) several ovariotomies (the exact number is not readily available) performed between the 16th and 32nd weeks of pregnancy; (2) three ovariotomies during the early puerperium—two on account of twisting of the pedicle, the other because of infection in the cyst; (3) five ovariotomies and Caesarean sections in women near term or in labour.

No one will seriously challenge ovariotomy in groups (1) and (2), even if, as in many cases, the cysts are symptomless when first discovered. Torsion of the pedicle is more frequent in pregnancy (20%) and the puerperium (40%), the cyst if it is pelvic will offer an obstruction in labour, and, finally, we can never be happy about an ovarian tumour until it is excised and sections have been examined. It is the third group around which discussion will develop. In four patients the dermoid cysts were pelvic (obstructive), and in three of these the patients were in labour and the cervix was fully dilated. Forced down by strong pains and the presenting part, the bulging tumour and overlying vaginal wall were visible just within the vulva in two of these patients. One cyst was found to be firmly adherent to the floor of the pouch of Douglas. The fifth tumour was

a multilocular cystadenoma and was situated in the left hypochondrium (non-obstructive).

I have based my practice of first performing Caesarean section and then ovariotomy on the following grounds : (1) Considerable forward dislocation of the pregnant uterus or even complete eventration may be necessary before obstructive cysts can be delivered if manipulations are to preserve the integrity of the cyst wall and safeguard the thin-walled veins in its pedicle. (2) Some cysts may be adherent, and the difficulties and dangers of delivering them from behind the pregnant uterus are even more pronounced. (3) After evacuation of the uterus there is a marked decrease in the calibre of the veins of the pedicle ; this is easily ligated, and as a result of the relaxation of the broad ligaments can be buried without drawing structures together under tension. (4) Only one anaesthetic is necessary, which may not be so unless the condition of the cervix is such as to justify immediate vaginal delivery. (5) The lower-segment operation is always used, the risk of subsequent rupture of the scar is very remote, and there is no question of condemning these women to a series of repeat operations. In one of my cases of obstructive cysts the patient was not in labour. By adding abdominal delivery to ovariotomy such a course seemed at least more humane, and under modern conditions and with present-day technique the maternal risk can have been increased by only an infinitesimal degree.

It must, however, be admitted that there are arguments on the other side. One can readily imagine that in an occasional obstructive case in which, from repeated vaginal examinations or from other interference, infection may be presumed or is clearly evident, the cyst might be drawn out of the pelvis and the infant delivered either by version or by forceps with advantage to the mother. This could be done by an assistant while the abdomen was open, the ovariotomy then carried out, and the pedicle dealt with under the most favourable technical conditions. The older vaginal methods of dealing with obstructive cysts carry too many risks to warrant them any place to-day outside the history of obstetrics.

In the latter part of his letter Prof. Cameron has raised another subject when he avows his belief that the classical should be selected in preference to the lower-segment operation in cases of placenta praevia. In 1932 I performed the first lower-segment operation for placenta praevia in the Liverpool Maternity Hospital, and three years later began to carry out this procedure in such patients under local analgesia. I published in 1939 the details of my first forty-three patients, and since then this number has been considerably added to, still without maternal mortality. In the same publication I considered fully the arguments against the lower operation ; indeed I set them out so fairly and prominently that several people have confessed that, on reading this section, they were deterred once and for all from ever using this method in cases of placenta praevia. In fact, most of the arguments were the conjectural outpourings of theoretical minds, and in actual practice it was found that things just did not work out in the way that had been supposed. The literature shows quite clearly that the majority of those who use the lower-segment operation as their standard procedure also employ it without demur in their patients with placenta praevia. It shows, too, that the maternal mortality of this operation in placenta praevia is certainly not higher than the classical.

Since 1932, 175 patients with placenta praevia have been delivered through the lower segment. In ninety-seven patients local analgesia was used. There were three deaths, none in the last 100—post-partum haemorrhage (spinal anaesthesia), diabetic coma (general anaesthesia), peritonitis (general anaesthesia, intrapartum infection with rigors at time of operation). Local analgesia is invaluable as our chief means of preventing uterine atony and post-partum haemorrhage ; ergometrine and pituitrin act swiftly and powerfully without first having to overcome the relaxing effects of general anaesthesia. Since the beginning of 1942 there have been fifty-one abdominal deliveries, all but two by the lower-segment operation, and in thirty-one of these the anaesthesia was local. So it would seem that a certain uniformity of practice exists in this hospital, whenever abdominal delivery is selected as the method of treating cases of placenta praevia.

But these perhaps are not the most important things after all. It is evident from the closing part of his letter that Prof. Cameron and I are in full agreement on the main issues. With the lavish use of blood and plasma, anaesthesia carefully chosen and carefully administered, courage, energy, and operative ability on the part of the obstetrician, no exsanguinated woman should die if she once gets as far as a bed in a well-equipped and well-staffed maternity hospital. Bed is enough, for, as he obviously and rightly implies, mere transference to the theatre table may gravely jeopardize the chances of such women.—I am, etc.,

Liverpool. C. MCINTOSH MARSHALL.

Sulphonamide Therapy in Otitis Media

SIR,—Nine months ago I drew attention in the *Journal* (June 3, 1944, p. 747) to some of the dangers attributable to sulphonamide therapy in suppurative conditions of the middle ear and mastoid, and in the intracranial complications arising therefrom. The article stimulated a correspondence which continued for many weeks, but some widely divergent views were expressed, and as a result no unanimity of opinion emerged to act as a guide in assessing the need for using these drugs in otitic infections.

Some correspondents supported the free, if not indiscriminate, use of these drugs both before and after drainage, and denied that masking of symptoms occurred as a result of sulphonamide therapy. Such views are in direct conflict with those expressed last week at a representative meeting of otologists in London, at which this subject was under discussion. Stronger views than were contained in my article in condemnation of the indiscriminate use of these drugs were expressed by many speakers, and much emphasis was laid upon the masking effect and also upon the deafness which can result from the action of sulphonamides. Sensitization of the patient, rendering him drug-fast, and damage to the kidney were also factors causing disquiet. In the milder forms of acute otitis it is probable that resolution would be just as complete, and in some cases with better hearing, if the drugs were withheld.

Now that a sufficient time has elapsed since the introduction of sulphonamides to enable observers to take stock and assess both the value and danger of these drugs in otitis, it would be useful if a clear expression of opinion from otologists were available to those who feel uncertain about the indications for the use of such a two-edged weapon in cases of otitis media.—I am, etc.,

London, W.1. A. R. DINGLEY.

Trichlorethylene in Midwifery

SIR,—I do not remember seeing an adverse report on the use of trichlorethylene as an analgesic in midwifery. Freedman (*Lancet*, 1943, **2**, 696) using his inhaler and Edwards (*Brit. med. J.*, 1943, **2**, 795) using Marrett's inhaler were satisfied as to its efficiency and relative safety.

I have been using it for some years, and believe it to be superior to nitrous oxide in many respects. I have noted no undesirable effects. Originally I used an inhaler of the draw-over type, which I designed and had made, but I found this somewhat clumsy. It occurred to me that the old-fashioned Clover or Hewitt's modification would possibly answer the purpose.

This I have found to be the case, and in the last 40 or 50 cases in which I have used it I have been well satisfied with the results. My practice is to place about 1 oz. in the container, to remove the rebreathing bag, and to fix the indicator at between the 1/4 and 1/2 positions, with a small piece of rubber tubing compressed to go between the container and indicator.

The patient uses the inhaler herself in the same manner that she uses a nitrous-oxide-and-air machine. As the head is crowned and when delivery is taking place the indicator can be moved to "Full on." If trichlorethylene is administered with the indicator in this position for some minutes perineal repairs can be carried out, although the patient will not be relaxed. It is my belief that the fact that trichlorethylene does not cause muscular relaxation is of definite advantage in midwifery, since the uterine tone seems to be maintained. This is, of course, a property of nitrous oxide, but trichlorethylene has the obvious advantages of portability and cheapness.—I am, etc.,

Mount Vernon Hospital, Northwood. D. C. DEVITT.

Barotrauma

SIR,—The following facts regarding the history of aviation medicine of the ear may be of interest in view of the letter by Mr. F. W. Watkyn-Thomas (March 3, p. 310).

The earliest account of aural symptoms caused by flying was given in *1783* by Charles—a French physicist. He invented the hydrogen-filled balloon, and during his first flight to over 1,500 fathoms—i.e., over 9,000 ft.—he apparently suffered from a mild anoxaemia from which he was roused by severe pain in his right ear and "glandes maxillaires." Charles attributed the earache to expansion of the air within the cavities of the ear during ascent.

As a result of the study of the symptoms experienced by Charles and by many other balloonists and of his own observations in the decompression chamber, Paul Bert wrote the following comprehensive account of the effects of barotrauma on the ear in *La Pression Barométrique*, which was published in *1878*:

"Pains in the ears have been noted by all observers during compression as well as decompression. All have given the exact explanation of them; they have shown that since the Eustachian tube, obstructed for different reasons, does not permit the compressed air—i.e., during descent—to enter the tympanic cavity, the tympanic membrane is pushed back and distended, causing pain which may be unendurable. Sometimes it is even ruptured. . . . Similar symptoms, but less severe, accompany decompression (i.e., during ascent). They can be checked by opening the tube, either by swallowing or—and this is a more certain method—by making a strong expiration with the nose and mouth closed. These repeated procedures result in re-establishing the permeability of the tube, the obliteration of which is a frequent cause of deafness. . . ." (Hitchcock's translation, 1943.)

In *1918*, at the request of the military authorities, Mr. Sydney Scott visited France to investigate the aural disabilities which were occurring in flying personnel. As a result of his observations he formulated a series of rules (published in 1919), of which the following form a substantial part of the prophylactic measures adopted to-day to prevent barotraumatic disabilities:

"(*a*) Airmen should not fly with a cold in the head or sore throat, or when unable to inflate both Eustachian tubes at will.

(*b*) Airmen who can open the Eustachian tubes by swallowing should use chewing-gum to stimulate the flow of saliva and keep on swallowing—especially during descent.

(*c*) Airmen who cannot rely on swallowing to open the Eustachian tubes repeatedly and rapidly should make a rule of self-inflating the ears by Valsalva's method and should begin to do so at the commencement of descent—repeating the procedure once, say, every 1,000 ft.—and not wait until they land."

It was not until *1937*, however, that the signs and symptoms of tubal dysfunction during flight were described as an *entity* by Armstrong and Heim, and they designated the syndrome "aero-otitis media."—I am, etc.,

JOHN E. G. MCGIBBON.

SIR,—Your correspondent Dr. A. B. Alexander (Feb. 24, p. 276) brings up the difficult question of the nomenclature of otitic barotrauma. This has been the subject of much discussion among interested Service otologists, both British and American. The term "otitis media" at once calls to mind an infective lesion of the middle ear, and the prefix "aero" does not dispel this. We agree that inflammation is an inevitable sequel of the trauma, and therefore have no objection to the implication of inflammation suggested by the adjective otitic. The only non-inflammatory change that can be seen on otoscopy is the inward displacement of the membrane: all other visible changes are inflammatory. Thus "otitic" is, in our opinion, the correct adjective, as it gives the correct geographical site of the lesion and also implies the secondary inflammatory changes.

We consider that the condition is essentially traumatic, and do not think that the term "barotrauma" is in any way misleading. The tympanic membrane ruptured by atmospheric pressure is just as much an injury or trauma as the lung ruptured by oxygen delivered from a cylinder, and few would dispute the traumatic nature of the latter.

"Tubo-tympanic pressure syndrome" is a cumbrous term which is not self-explanatory. No satisfactory reason for its adoption has yet come to our notice, and until some adequate reason for changing the nomenclature is brought forward we propose to continue to call the series of changes produced by atmospheric pressure in an unventilated middle ear "otitic barotrauma."—I am, etc.,

E. D. DALZIEL DICKSON, Air Cdre., R.A.F.
Central Medical Establishment, R.A.F.

The Medical Film

SIR,—Your leader of Jan. 20 (p. 87) on the medical film has just reached me. It is so much to the point that I feel disposed to add to it.

Some ten years ago a small party, including myself, convinced of the value of the film as an instrument of education, and having suffered as students from some of its early and boring misapplications, began to produce surgical teaching films, with the support of several of the senior honorary members of the staffs of the Manchester Royal Infirmary and Salford Royal Hospital. Production ceased at the outbreak of war for obvious reasons, but by that time a number of films had been made (including one which was awarded the Bronze Plaque of the Royal Photographic Society), and we were agreed on certain basic principles governing the technique of the film in medical teaching.

The present-day student audience is fundamentally a section of the ordinary film-going public which by long use has come to accept nothing short of perfection in photographic and cinematic technique. Therefore, the slightest suggestion of "amateurishness"—whether in photography, lighting, cutting, or continuity—is immediately recognized, and not only excites adverse comment but diverts the student's attention from the real purpose of the film. It is not enough merely to photograph an operation and screen the result. Weeks of preliminary work are required, and the script must be as finished as for any entertainment film. Cutting and timing after shooting are as essential in teaching medicine as they are in a Hollywood "musical," and a film that takes days to shoot may take months to cut.

The ideal medical production unit is built round the professional side, and not vice versa. We were fortunate in finding the whole team—cameramen, lighting technicians, cutter, and so on—from those who were either qualified or at least final-year students. In the majority of cases the senior "honorary" who "sponsored" the film decided the general line to be taken, and thenceforth acted as adviser rather than as director, as this latter job demands a degree of technical knowledge of the cinema which is rarely coupled with professional eminence. The technicians were found among the younger members. A wholly professional team makes for very smooth working, especially in the operating theatre, where the presence of laymen is always a handicap and may be a danger.

The Manchester Unit consider that the film should be used as a supplement to clinical teaching, and that its use in such a way, like the summary at the end of a chapter, can be instrumental in clarifying the student's ideas. It cannot replace actual clinical instruction in the infinite variety of cases (although its limited value in this respect is discussed below), for by its very nature the film must be dogmatic. Technically, first-rate colour is essential, and this demands skilled photographers. The value of sound is debatable. At present sound projectors are rarities in medical schools, and in any case the "summary" film is often better for the skilful use of silent titling and cartoon. Visual memory in most of us is more reliable than auditory.

The film has other more specialized applications. It is an ideal instrument for teaching the principles of operative technique, since intelligent camera work can put every member of a large class in the position of the surgeon or at least of the first assistant—a marked improvement on the usual unseeing huddle of students at an actual operation. Long-focus lenses bring the finest detail into satisfying close-up. In passing, few surgeons operate easily for the camera without practice. Hands must be kept out of the "line of fire," even at the cost of some discomfort.

The third great use of film—that which your leader refers to as "Prof. X's series of films of tics and tremors"—requires different handling. Here we feel that individual case films, indexed like ordinary case notes, should be available centrally to illustrate actual cases. A lead title and catalogue number should identify them, and printed notes should be available for the teacher. They should remain silent, and be used exactly

as the present-day lecturer uses an actual patient for demonstration. In effect they constitute a series of selected patients, untiring, and constantly "on tap" at all stages of their disease. Such film-strips—they are not true films—can be assembled as required, with a few feet of black spacer-strip between cases, and the projector used to run each case through, stopping on the spacer until the next case is required. We used this method for Mr. Robert Ollerenshaw's presidential address to the Orthopaedic Section of the R.S.M. a few years before the war to demonstrate in London a series of patients who lived in the North and who were therefore not available for the meeting.

Finally, I can confirm from my own experience, both in the Service and before, the efficiency of the film as an instrument of education. But it must be properly used, otherwise we shall build up a barrier of conservative opposition to this development from people who say that the film is no good, but who really mean that *bad* films are no good. The Scientific Film Association may be "interested in means rather than ends," but unless the means be skilfully handled the end will not be achieved. Perhaps the formation of a Section of Medical Cinematography of the R.S.M. may be the answer.

My apologies are due to the other members of the team for not consulting them, but they are scattered over various theatres of war. I trust they will not think I have misrepresented them.—I am, etc.,

ROBERT G. W. OLLERENSHAW,
Major, R.A.M.C.

C.M.F.

Nursing and Tuberculosis

SIR,—The grave responsibility of nurses' health does not seem to be anyone's business. Your medical correspondents look at the case from the point of view of infection. The letter from J. Eyre (March 10, p. 345) sets out, more ably, the whole picture.

Infection is only part of the problem. The maintenance of resistance is highly important. The factors which contribute to breakdown in health often form the environment in which the average nurse must live and work during training. Her span of day is long—13 and sometimes 14 hours. Her working week is at least 48 hours, often longer, and in addition she is the servant of an examining body. Meals are frequently badly spaced, so that she works hard at high pressure when hungry and tired.

At one time the nurse in training was called a probationer; now she is designated "student nurse," but the status has not been changed. Sister tutors have been appointed to help her. It is their heartbreak to see, more intimately than others, these young girls of all classes, arriving keen and anxious to serve, become discouraged and disheartened: discouraged by the double burden of work and study far too great for anyone to carry for long, and disheartened because they are not taught at the bedside. To the medical men they are only the "hewers of wood and drawers of water," and as for the busy ward sister she is first of all a foreman and must get the work done. She is interested and would teach if she had time, but there is no time.

The bookstalls display considerable literature on health care. Our young people come to hospital to learn how to put this into practice, only to find they must make bricks without straw; the tools are not provided; and, moreover, they may be expected to live and work under sordid unhygienic conditions that would not be tolerated in the homes from which they come.

Supervision of nurses' health has been dealt with in a pamphlet issued by the King's Fund. And yet we find raw recruits to sanatorium nursing sent on duty without any instruction on the precautions to be taken to prevent the spread of infection and safeguard their own health. They may be given an initial medical examination with *x*-ray examination of the chest, or this may be deferred for several weeks. Up to the present this recommended measure is not made a condition of recognition of nurses' training schools, not even of sanatoria. When a nurse becomes liable to "direction" under the Ministry of Labour regulations an initial medical examination, including *x*-ray examination of chest, is required before she is permitted to nurse cases of pulmonary tuberculosis. A nurse becomes liable to "direction" when she has had 12 months' nursing experience. It is evident, therefore, that what is the right of the worker of 12 months' experience is not demanded for the raw recruit who enters a sanatorium for training.

Your correspondent is right: "make do and mend" have reached saturation point. An entirely new approach to the training of nurses is needed if *nursing* is to survive.—I am, etc.,

EVELYN C. PEARCE.

London, W.2.

Penicillin: Price and Manufacture

SIR,—I am very much obliged to Dr. Frank Hartley for his instructive letter (March 3, p. 307) on the subject of the price of penicillin. Even now, however, we have not been told what the price of penicillin is or why there is any need to make a secret of it. What exactly does Dr. Hartley mean by saying that the rumoured price is in excess of the real one by 1,000%? Does he mean ten times as much? If so, I can only imagine that the 1,000 was used to make the figures more impressive, like expressing a mile in terms of millimetres.

I think Dr. Hartley need hardly be surprised that there is still a widespread impression in the public mind that there is a "penicillin ring." I can't quote chapter and verse, but the impression was surely launched by the Minister of Health in the House when he stated that the manufacture was to be given over to one or two large firms, as only these would be efficient enough. It was as a result of this statement that most of us who were already making the stuff decided to "pipe down." Now it appears that, apart from any ordinary trade associations, the firms in question are welded together by the Therapeutic Research Corporation, of which Dr. Hartley is secretary. It is surely asking too much to expect the public to believe that such an organization has never discussed the question of price.

It is good, however, to hear that some competition is at last being permitted, but it is very hard to see why this was not encouraged from the first. There are surely ample safeguards in the law as it stands to ensure that bad stuff is not sold to the public, and it is merely ridiculous to restrict the manufacture and then subsequently announce that there is none for general public use. One gets an uncomfortable feeling that this is a highly characteristic piece of bureaucratic interference which augurs ill for the future of medicine.

I hope someone will tell us what is done with "time-expired" penicillin. I know of one large hospital where it is all destroyed on the day of expiry, but is it, in actual fact, any the worse for being time-expired if kept in refrigerator?—I am, etc.,

J. W. SHACKLE.

Haywards Heath.

The Metric System and Medicine

SIR,—By the time this letter reaches you there may have been further correspondence of which I am unaware. Some of your correspondents have rightly stressed the danger of using dual mensurations. In a recent medical article one found the abbreviations "g., gr., gm."—small wonder that one of my assistants needed my help in their interpretation. Again, in a modern obstetric textbook appears "cm." and "in.," in the same paragraph and separated by only a few lines. Since Sir John Anderson has given an emphatic "no" to the question of adoption of the metric system in Britain, and since there seems to be no doubt that our obsolete and complicated method of weighing and measuring is to be perpetuated for generations to come, I should like to make a final plea. In all medical articles and books might the metric equivalents be put in parenthesis? Especially does this apply to prescriptions. I can assure those authors who take the trouble to do this that they would receive the silent thanks of the many foreign doctors who wish to read British medical publications.—I am, etc.,

W. C. W. NIXON.

Istanbul University.

Child Guidance Clinics

SIR,—Without wishing to express disagreement with the main argument of Dr. Ralph A. Noble's letter (March 10, p. 345), there are certain statements of fact in relation to child guidance clinics which require correction. In the explanation of the grouping of the clinics set out in the list prepared by this Council it is expressly stated that "owing to difficulties of staffing it has now been decided that newly established clinics

and clinics where there have been changes of staff should remain unclassified until after the war." Consequently the 15 listed as Group 1 Clinics are those which were in existence at the outbreak of war and where no changes of staff have occurred since. The facts are that 47 clinics are fully staffed—i.e., with a complete team of psychiatrist, psychologist, and psychiatric social worker—and only 3 not under medical direction (a comparative table is given in the report of the Provisional National Council for Mental Health for 1943). Some of the clinics are under the administrative direction of a school medical officer who is directly responsible to the Education Committee. But in the great majority the psychiatrist is responsible for clinical direction. The Council has from its inception done its utmost to ensure that child guidance work in this country shall be carried out by fully staffed clinics under psychiatric direction, and has always had the fullest co-operation in attaining this objective from the Ministries concerned.—We are, etc.,

ALAN MABERLY,
R. G. GORDON.
Medical Directors, Child Guidance Council.

The Services

Col. E. A. Sutton, C.B.E., M.C., late R.A.M.C., has been appointed D.D.M.S., and has been granted the acting rank of Major-Gen.

Temp. Surg. Lieut.-Cmdr. R. St. J. R. Johnston, R.N.V.R., has been mentioned in dispatches for outstanding courage, leadership, and skill during the build-up of the Normandy bridgehead.

Capts. P. Delap and L. F. McWilliams, R.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in the field.

The *London Gazette* has announced the appointment as M.B.E. (Military Division) of Fl. Lieut. R. C. Dickson, R.A.F.V.R. The citation reads as follows:

One afternoon in November, 1944, an aircraft landed from an operational sortie, but when it had proceeded some 600 yards up the runway an explosion occurred and the aircraft burst into flames. Fl. Lieut. Dickson, the medical officer of the unit, immediately hastened to the scene and, on arrival, found one member of the crew lying clear of the wreckage. After giving this airman a cursory examination, Fl. Lieut. Dickson gave instructions for him to be removed to hospital immediately. By this time ammunition and pyrotechnics in the aircraft were exploding continuously. The petrol tanks were blazing furiously and liable to explode at any moment. Undeterred, Fl. Lieut. Dickson went to the aircraft to help another member of the crew who was trapped in the burning geodetics, his boots being on fire. Displaying complete disregard for his own safety, Fl. Lieut. Dickson tore away the geodetics with his bare hands, injuring himself in the process, and freed the airman, whom he then dragged to safety. Fl. Lieut. Dickson's courage and devotion to duty on this occasion undoubtedly saved two lives. He has at all times shown outstanding devotion to duty and has done much to maintain the morale of air crews and ground personnel during difficult periods.

DENTAL UNITS FOR THE NAVY

At the Royal College of Surgeons on March 8 two Red Cross and St. John Dental Units were presented by Field-Marshal Sir Philip Chetwode, on behalf of the Joint War Organization, to the Admiralty for the use of the Royal Navy. Sir Alfred Webb-Johnson, President of the College, who was accompanied by the Vice-Presidents (Sir Girling Ball and Mr. C. Max Page) and the members of the Council, said it was a happy idea to hold this ceremony at the Royal College of Surgeons because it could be regarded as the academic headquarters of British dental surgery. By far the greatest number of dental surgeons practising in this country were licentiates of the College, which was also the home of the finest Odontological Museum in the world. The fullest advantage could be obtained from this gift only if adequate numbers of skilled technical assistants were provided to help in the dental service. The accepted policy of the College was that dental surgeons, particularly those in public services, should be relieved of much of the details of dental prosthetics and of routine oral hygiene, which should, however, be carried out under their direction. The provision of an adequate number of technical assistants would leave the dental surgeons much more time for real operative dental surgery and for scientific work. It was in communities like schools, factories, and the Services that this work could be organized most efficiently and the greatest benefit result for the greatest number. An example had been set by the Royal Air Force, and he trusted that the Royal Navy would adopt the same plan. Sir Philip Chetwode said that the Red Cross and St. John were happy to hand over these units to the Navy. Surg. Vice-Admiral Sir Sheldon Dudley, Medical Director-General of the Royal Navy, in accepting the units with gratitude, said that he could testify to the celerity with which Red Cross and St. John answered an appeal for help.

Obituary

R. M. DOWNES, C.M.G., M.S., F.R.A.C.S.

Major-General, Australian Army Medical Services

It is now known that Major-Gen. R. M. Downes, war historian, Australian Medical Services, and Major-Gen. G. A. Vasey were killed in an aeroplane accident which occurred off the North Queensland coast on March 5. The Commonwealth Prime Minister, Mr. Curtin, who announced the accident, said it was a shocking blow to Australia.

Rupert Major Downes was born at Adelaide on Feb. 10, 1885, son of the late Major-Gen. M. F. Downes, of Dedham, Essex, and of Brighton, Victoria. He was educated in England at Haileybury College and in Australia at Ormond College, and entered Melbourne University as a medical student, graduating M.B., B.S., and eventually taking the M.D. and M.S. degrees. He joined the A.A.M.C. in 1908 and served during the last war with the A.I.F. In 1916–17 he was A.D.M.S., Anzac Mounted Division, and during the next two years held the post of D.D.M.S., Desert Mounted Corps and A.I.F. in Egypt. He was mentioned in dispatches and created C.M.G. in 1917. He served for thirteen years after the last war as D.D.M.S., 3rd Military District, and Director-General of the Commonwealth Medical Services, with the rank of major-general, from 1934 until last year, when he relinquished that post and was made medical historian to the Australian Army.

Gen. Downes had been consulting surgeon to the Children's Hospital, Melbourne, and the Victoria Eye and Ear Hospital, lecturer on medical ethics in Melbourne University, and honorary surgeon to the Governor-General of Australia, 1927–31. He became a Foundation Fellow of the Royal Australasian College of Surgeons in 1926. He joined the B.M.A. in 1911, was president of the Victorian Branch in 1935–6, and represented his Branch at the Aberdeen Meeting just before the outbreak of this war. The sympathy of the profession of this country goes out to their colleagues in Australia and to the widow and children of a very distinguished public servant.

HAROLD CHAPPLE, M.Ch., F.R.C.S., F.R.C.O.G.

We regret to announce the death at his home in London on March 8 of Mr. Harold Chapple, senior obstetric surgeon to Guy's Hospital. Following an illness in January he had just begun to work again when he collapsed in his consulting-room, and after only two days' illness he died.

Chapple was born in Australia on Feb. 13, 1881, and took his B.Sc.Adelaide before coming to this country; the result was that he started medicine rather later than most. He studied first at Cambridge and then in 1905 went to Guy's for his clinical work. He qualified M.B., B.Ch. in 1908. In 1910 he became F.R.C.S.Eng., and in 1911 M.Ch. After two years as registrar he was appointed obstetric surgeon to Guy's Hospital in 1913 on the death of Mr. Targett, and apart from the time that he spent in the R.A.M.C. during the war 1914–18, he continued to work there until the time of his death.

J. B. B. writes:

In his earlier years he was joint author of two textbooks, and from time to time he contributed to the journals, but it was not on the academic side that Chapple was outstanding; rather it was in his approach to the practice of his specialty. All his life he insisted on treating the patient as a patient, and no one was more aware of the psychological aspects of gynaecology. Above all, however, he was masterly in his handling of the apprehensive patient and the difficult patient, and he was able to inspire the greatest confidence in all. As a surgeon he was always thoughtful and painstaking, obtaining excellent results in consequence. His charm of manner and extreme courtesy were notable in his dealings not only with patients but also with junior colleagues, nurses, and students alike. He was more observant, however, than many realized, and those who were poor at their work were soon recognized. Even up to a short time before his death he would assist a new registrar with an operation and remain patient to the end, however slow the operator might be. His patience and calm were really quite extraordinary, but it was curious to realize that with the outward calm and unruffled manner Chapple was sometimes worrying about a patient, and worrying to excess.

As a young man at Guy's Chapple was renowned for his vigorous enjoyment of life and his many accomplishments. He was an excellent games player, getting equal pleasure whether winning or losing. While at Cambridge he won his blue for tennis, playing in a famous six which included Wilding. In addition he played rugger, swam, sang, and was a really good actor. Up till recent years he made golf his recreation and often played for the Medical Golfing Society. In 1939 he was elected president of the society, and remained so until he died. On golfing occasions, and indeed on many others, he was most excellent company, whether host or guest, and he excelled as a raconteur.

In 1938 Chapple was taken suddenly ill one evening in his consulting-room and for several days was near dying from a coronary thrombosis; he was always sure, however, that he would recover, and eventually he did, to start work again some six months later. It was from this time that one realized the courage that he possessed; even when most ill he could still joke, and ever afterwards he would never let his disability damp his zest for life. In 1940 when he should normally have retired from Guy's he chose to carry on, and regularly twice a week he journeyed to Pembury to teach Guy's students and to operate. He felt strongly about the war and the necessity to do a job of work so long as Britain and the Empire were engaged in a deadly struggle for life. For many years he had talked of the danger inherent in the German way of thought and life, and for long had foreseen this war. His loyalty to this country was only equalled by his love for his native country: he was always proud of being an Australian, and this would show in little ways—for example, his affection for the blue of the R.A.A.F. His was a lovable spirit and he will be sadly missed by many friends. In 1911 he married Irene, daughter of Sir William Arbuthnot Lane. To her and to their two sons we extend our deep sympathy.

D. M. MACM. sends the following tribute:

I have been asked to write an appreciation of my dear friend, Harold Chapple. I would epitomize his character in three words—charm, courtesy, and consideration. To few men has it fallen to be so beloved not only by their patients but by all with whom they have worked—sisters, nurses, students, and doctors. Harold loved life, loved his work and all humanity. He often said to me: "How lucky you are to have all types of patients—whereas I deal only with women." Loving his chosen branch of our profession as he did, yet he was essentially a man's man, a tennis blue, a good golfer and good companion. In his work he was of the very best: a first-class accoucher with (as he expressed it) a niblick in his bag to get out of the bunkers with which maternity abounds; as a surgeon a first-class operator. His plastic perineorrhaphies were truly brilliant and brought years of good health to very many women who had endured previous years of constant suffering. In over 30 years of helping him operate I have never known him lose either his temper or his nerve in the theatre no matter what crisis may have arisen; no wonder the theatre sisters and nurses loved to work for him. As a teacher he was exceptional. He loved the young and they in return venerated him: one of his most valued possessions was a signed photograph of himself and a class of students with the proud caption of "Pass list 100%." But my happiest memories are away from work—on the golf course and around the table—a wonderful host and a wonderful pal, witty, charming, and entertaining. He died, as he would have wished, in harness, helping others to the very end, and with his passing leaves a gap that it is impossible to fill—loved and missed by his friends and patients both in the Borough and in the more stately homes of the West End.

LORD DAWSON OF PENN

Lord MORAN, P.R.C.P., sends the following tribute, which appeared in the *Sunday Times*:

It will be a long time before any member of the medical profession will again influence opinion in England as Lord Dawson did between the two wars. I am not sure that I can explain this to those who did not know him. He stood apart from others, not so much for his pre-eminence as a physician, but rather because he possessed a gift which is more prized than any other by men of affairs: he knew instinctively what the average man was thinking and how he would react to some measure or action that had been taken by the official world. He was, of course, born with that gift, but he had developed and perfected it over the years until his judgment in such matters was impressive. This almost intuitive knowledge of what was happening in men's minds contributed to his success in practice—and no doctor in his time was more successful. Once when I had seen a patient with him and we had to explain to half a dozen relatives the gravity of the complaint, he appeared to divine at once what was passing through their minds, and he was able to quieten their fears in turn before they had even found expression.

Like his Royal patient, King Edward VII, Lord Dawson was more interested in men than in books. He learned from experience, so that he had come to have a profound knowledge of the ways of men. His name was a household word for two generations; all the prizes that the world can give were his. Great professional success makes day of night, but he never hurried over anything, and he gave as much care to the humblest commoner as to the King of England.

He was quite unspoiled by success, and never lost his curiosity in young people. He spoke to them as one of themselves, and they opened their hearts to him. Lord Dawson himself seemed until quite lately to be untouched by time. His eager spirit continued to regard life as great fun; it was still an adventure that had not lost its freshness. In mind and body he remained alert; even in going upstairs he would take two steps at a time. Then came distressing illness. He wrote to me after his first operation: "So far so good, but not very far." And after the second and more serious operation he remained undefeated. He insisted on being kept in touch with affairs, and one of those summoned to his bedside has told me that it was an hour and a half before he was allowed to depart. He had enjoyed a strenuous life, and now he was resolved to go on working to the end.

Sir FREDERICK MENZIES writes:

I should like to be allowed to pay my humble tribute to the memory of Lord Dawson of Penn. Although I knew him slightly before the war began in 1914 it was not until the year 1919 that our acquaintance gradually developed into a real friendship. This was mainly due to the fact that very soon after Dawson returned from war service it became obvious to me that he was one of the first of the eminent members of our profession to appreciate the great developments which were then rapidly taking place in the work of the Public Health Services, notably in connexion with tuberculosis, maternity and child welfare, venereal diseases, and the school medical services, and the still greater developments which were likely to arise in the near future as a result of the report of the Maclean Committee on Poor Law Reform. In these and in many other directions Dawson saw far ahead of many of his contemporaries in voluntary hospital circles, more especially because he fully realized the effect which these responsibilities, placed by Parliament upon local government authorities, must have upon the future relation between voluntary hospitals, particularly medical school hospitals, and the local government authorities throughout the length and breadth of the whole country. From 1919 to 1939 Dawson never ceased to work hard towards the greatest measure of harmonious co-operation possible between the voluntary hospital organizations and the local government authorities of the County of London. I can personally testify to the enormous amount of time, diplomacy, and tact which he whole-heartedly devoted to this task, the immense sacrifice which he must have made in his own private professional life, the wise counsel and statesmanlike attitude which he adopted all through this period, filled as it was with many difficulties and much controversy. But it is pleasing to be able to record that far more than any other individual member of our profession he did succeed to a very considerable extent in bringing about a large measure of valuable co-operation between voluntary organizations and public authorities, of which a striking example was the British Postgraduate Medical School at Hammersmith Hospital.

To me one of the most remarkable features of Dawson's extraordinarily busy life was the fact that I never remember him being in a hurry at any time from early morning up to late at night. He possessed in full that marvellous gift of making you feel that when you were in his presence for any purpose you were the only person in the world at that moment in whom he was interested and that you had all the rest of his day at your disposal if you wanted it. Add to this priceless gift the fact that he had an exceptionally charming personality, a delightful sense of humour, a heart of gold, a vast fund of common sense and worldly wisdom, a statesmanlike attitude towards problems of national importance, and it becomes easy to understand how and why he rose to greater heights than were ever previously attained by any member of our profession in the social, political, and scientific world. No doubt many of his friends will bear their testimony to his professional abilities and achievements, but may I add a purely personal experience of him as the "beloved physician." In the spring and summer months of 1934 I was confined to bed by a long and wearisome illness, during which Dawson came to see me at frequent intervals. Ultimately he advised me to go to a seaside nursing home at Hayling Island. A few weeks later I received about midday a telephone message from his London residence to the effect that he was coming to see me about 5 p.m. He arrived and spent some time in thoroughly overhauling me, followed by a very encouraging prognosis. Then he sat down by my bedside and we talked about many subjects of mutual interest. At 7 p.m. he said, "Well, now I must leave you." I said I supposed he was going to spend the night with a relative of his whom I knew was at that time living in the neighbourhood of Hayling Island. He replied: "Oh, no; I am only on my way to Scotland for a holiday, and to-night I shall motor as far as Cheltenham, and to-morrow from there to Ruthin Castle, and then on to Balmoral." That incident was characteristic of Dawson's wonderful kindness and thoughtfulness. He had deliberately travelled hundreds of miles out of his way to see and to cheer up a sick

friend. I have no doubt that, if space permitted, many hundreds of his friends and colleagues could give similar examples, and in every case without the remotest idea on Dawson's part of either fee or reward. It is therefore not to be wondered at that to so many of us he was Bertie Dawson, the wise as well as the beloved physician.

DR. ALFRED COX writes:

May I be allowed to add a postscript to your grateful tributes to Lord Dawson? It was during the Centenary Meeting of the Association that I saw most of him, and I vividly remember the grace with which he presided over the many functions which fell to his lot at that time, and the ungrudging way in which for two years he gave time and thought to every detail. The two strongest impressions of him left on my mind were the way in which he kept his mind, as well as his body, young; and the fact that all his honours had left him completely unspoiled. It was always a pleasure to deal with him.

Your reference to Lady Dawson would have pleased him, for during our Centenary programme it was charming to see how implicitly he relied on her help and how she infused into everything she did—and it was much—that grace and charm which seem to have been Nature's gift to the partnership. The affectionate sympathy of everybody who had the honour of working with her husband goes out to her at this time, and we hope it may help her.

HAROLD FARLEY SEYMOUR, M.D.Lond., F.R.C.S.Ed., F.R.C.O.G., who died on March 6 at Rottingdean, was born in 1879 in Plymouth, and was educated at Plymouth College, and afterwards at the London Hospital. He qualified M.B.Lond. in 1901, and after holding various resident appointments at the West London Hospital he settled in general practice in Worcester City. He soon took a special interest in obstetrics, and obtained the M.D.Lond. in Obstetric Medicine in 1906. During the last war he served in the Royal Navy, and after release he settled in Brighton, took the F.R.C.S.Ed. in 1920, and then moving to Hove he specialized in obstetrics and gynaecology. In this specialty he quickly established a county reputation. He was made a foundation member of the Royal College of Obstetricians and Gynaecologists, and in 1937 the Fellowship was conferred upon him. He held many appointments, including that of honorary surgeon to the Sussex Maternity and Women's Hospital and honorary gynaecological surgeon to the Hove Hospital. Harold Seymour was a most industrious, conscientious, and proficient worker. Throughout life he was dogged by ill-health, with which he battled with unflinching courage. He was greatly admired by all his patients, for whose benefit he never spared himself, and he was esteemed and respected by his colleagues. Apart from his chosen work, which came first, his only other interest was mountain climbing. He was a member of the Alpine Club and the Swiss Alpine Club. He was a charming and courteous host, and will be greatly missed by a large circle of friends and patients.

Medical Notes in Parliament

PAPER FOR BOOKS

In the House of Lords on March 14 Lord ELTON called attention to the excessive restrictions on the supply of paper for book publication and moved for Papers. He said the facts were that up to the end of last October every publishing house which had been in existence before the war was entitled to an allotment of 40% of its pre-war consumption of paper. That meant in the aggregate 20,800 tons. There was also a small quantity of 1,700 tons which was distributed by the Board of Trade on the advice of a committee of publishers sitting under the chairmanship of Sir Walter Moberly. That brought the grand total up to 24,400 tons. There was a total distribution to all users for all purposes of 447,000 tons, of which 400,000 tons went to the Stationery Office and 50,000 to the War Office. Then last October there was an increase from 40% to 42½%—an increase of 1,300 tons, together with an increase of 600 tons in the Moberly pool—1,900 tons in all. Despite a recent deputation from Members of Parliament, the only later increase in the allotment had been one of an additional 1,000 tons for this Moberly pool, which was a selective pool, through which extra tonnage was given to applicants on merit.

No one expected that book production should flourish in war as in peace, but thus excessively pruned, under severe restrictions, books could not possibly play their part in the war effort. Liberated Europe needed British books to fill a five-years gap in their own libraries. They needed them to discover how the British lived and thought during these five years, and they needed them to take the place of Germany as the primary source of textbooks for the Continent. At home there was a desperate need for educational books for training the additional teachers required under the new Education Act, and for pupils as a result of the raising of the school-leaving age; books would soon be needed, too, for the returning university students. They were needed for the general public and for the Services. For the ordinary book allotment 10,000 more tons of paper a year were wanted.

The EARL OF HUNTINGDON asked whether it would not be possible (1) to give a higher priority to and allow a larger percentage of paper for books; (2) to release gradually from the Forces men and women who were either experienced printers or bookbinders or who had had experience of work in publishing houses; (3) to give some priority to the replacement of book-making machines which had got out of order; and (4) to import more pulp or more means of making paper as soon as the shipping situation allowed. He understood that a grass that had been discovered in New Guinea made extremely good paper.

Viscount MERSEY, speaking for Lord Samuel, said that the Red Cross had asked for about 500 books from educational libraries; 30% were reported as "not available," 30% were entirely unobtainable, and the balance were obtainable in very small quantities. Lord LANG said that the root of the difficulty was failure to regard the supply of books as a matter of very real, practical, national importance.

The EARL OF JERSEY supported the motion, but said he was astonished at the moderation of Lord Elton's demand for 10,000 tons. He would put it at three times that amount.

MEDICAL TEXTBOOKS AND JOURNALS

Viscount BUCKMASTER raised the question of the supply of paper for medical publications. He said that medical publications, in which he included journals and periodicals, were so restricted that it was difficult to see how the study of medicine could be pursued or how medicine could be practised in the manner expected. Publishers were now quite unable to supply the basic minimum of books needed by medical students. No one would dispute that anatomy was an essential part of the medical knowledge of a doctor. He could not imagine anyone being anxious to undergo an operation by a surgeon who had not a fairly full knowledge of it. The leading work, *Gray's Anatomy*, was quite unobtainable. He had tried to get it, either new or second-hand, without success. The same applied to *Buchanan's Anatomy* and *Cunningham's Anatomy*. In physiology, matters, if anything, were worse. In one class 15% of the students could not beg, borrow, or by any means short of theft obtain a copy of any of the leading works. How could men pursue their studies under such conditions? These facts about students' books were shocking, but there was also the medical man in practice, who would find it hard indeed to keep abreast of modern medical knowledge. It was not merely that writers were prevented by the shortage of paper from writing books, but there was a shortage of journals and periodicals. The latter were the arteries through which medical knowledge and information circulated. Yet here was an alarming position. The editor of one of these journals advised him that he had a waiting list of 1,500 doctors seeking to become subscribers and to obtain copies; also that he was quite unable to meet the demands for his journal from the liberated countries. This was unfortunate. The editor of another assured him that he could not in any way meet the demands of his subscribers, that his correspondents were drastically cut down, and that much medical knowledge of the first importance could not be passed on. It was not only the medical man in practice who needed these journals; they were essential to the medical research worker. He must have the power to express his findings as and when he pleased. He must keep in touch with the progress of his fellow workers in this country and abroad, especially in the United States. A Fellow of the Royal Society had told him that his colleagues in research did not expect to have a single paper published until 1946. How could they continue their work in such conditions? What sort of encouragement was that to give them? If the advance of medical knowledge was retarded the community as a whole was penalized.

A good example was provided in the field of social medicine. The Goodenough Committee had urged that this should receive every possible encouragement. Many young men and women were seeking to work in this sphere. Here was something which one would think would appeal to the Government, who would at least be anxious to encourage it, but the Ministry of Supply had refused the B.M.A. one ton of paper a year for starting a *Journal of Social Medicine*, a journal in which workers in this field might enjoy that free expression of opinion so essential to their work. These restrictions were

not only disheartening to medical men, they were damaging to the public also, and at a time when ever greater demands were being made on medicine. The number of doctors had greatly increased—it was something like 12% more than in 1938. Even with these figures it was clear that the total demands of paper for the medical world were negligible compared with the amount in daily use. Even if all restrictions were now removed it would be a long time before supplies could catch up with demand, and he urged the Minister, to whom he had written personally on this matter, to do his utmost to see whether some additional grant could be made before we lost ground which could never be regained.

The EARL OF SELBORNE, Minister of Economic Warfare, who replied, said that the Government was aware of the immense importance of books, especially at this time. But although we had more ships to-day than ever before, shipping shortage was greater than ever owing to other demands. Lord Elton had asked for 10,000 tons of paper; Lord Jersey had said that 30,000 tons was needed. He had been advised that the paper would not at the moment be procurable in America; we had in fact acquired all the paper that we could in America, so that an additional 30,000 tons, or even 10,000 tons, was not possible. Moreover, every ton of shipping just now was required for pursuing the war and for feeding the liberated peoples of Europe. Paper was not the only bottle-neck in the matter; labour in the printing and publishing trades was also in very short supply. We were faced with a shortage of paper in America, with the biggest shortage of shipping that we had yet experienced, and with the greatest shortage of man-power in all trades. On the top of that was a very greatly increased demand for books.

The Government had tried to divide the paper supplies equitably. A bigger allocation for books could only be obtained either by importing more paper and releasing more man-power, which was not possible at present, or else by making cuts in the allocations to other industries. It was not the book publishers who had had to submit to the biggest cuts. They were now receiving something like 42% of their pre-war requirements; newspapers, on the other hand, receive only 25%.

As regards medical books, about which Lord Buckmaster had spoken very strongly, he was advised that partly as a result of the efforts of the committee presided over by Sir Walter Moberly the publication of medical books at this moment amounted to 80% of what it was before control. But if there were the deficiencies Lord Buckmaster had mentioned then this was a matter which required the most serious consideration from the authorities concerned, and he would draw the attention of the President of the Board of Trade to the remarks made on that question.

Lord ELTON withdrew his motion.

What is Immunity?

Mr. ALFRED EDWARDS inquired on March 6 whether the Army Medical Department used the word "immunity" to mean "protected from a disease"; or what was the meaning of the word in reference to vaccination and the various inoculations. Sir JAMES GRIGG said the term "immunity" was used by the Army Medical Department to describe the effects of protective treatment against certain diseases. There were degrees of immunity, which necessarily varied in accordance with certain factors—for example, the resistance of the patient to a particular parasite.

Recruitment of Doctors

Sir E. GRAHAM-LITTLE inquired on March 8 whether the Minister of Health had considered an example submitted to him of the dissatisfaction among senior medical officers serving abroad at the small proportion of newly qualified medical practitioners called up for military service abroad in exchange for senior officers and the large number drafted into the E.M.S. at home. Mr. WILLINK said he had considered a letter which Sir Ernest had forwarded, but pointed out that the great majority of newly qualified medical practitioners fit for military service were already being called up after short periods in resident hospital appointments, which were necessary to provide the experience required for subsequent military service. Resident hospital posts were limited in number to the minimum wartime establishments approved for each hospital by the Central Medical War Committee. It was the policy of that committee wherever possible to call up the holders of the senior posts after a certain period so that a proper flow of young practitioners through these posts to the Forces could be maintained.

Notes in Brief

The process is continuing of release by the Service Departments of members of the Women's Auxiliary Services with nursing experience, including mental nurses, who desire to return to civilian nursing.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Sir Lionel Ernest Howard Whitby, M.D., has been elected Honorary Fellow of Downing College.

The Raymond Horton-Smith prize has been awarded to F. T. Prunty for his M.D. thesis on "Hyperfunction of the Adre Cortex."

The Council of the Senate gives notice of an election to Impe Chemical Industries Fellowships in the Easter Term, with ten from Oct. 1, 1945. The beginning of tenure may be deferred fo candidate engaged on national service, or on other work of natio importance, until he is released from that work. The Fellowsh have been established for original research in Physics, Chemist Engineering, Metallurgy, Pharmacology, Chemotherapy, or in subject related to one or more of these branches of science. Fello will ordinarily be required to carry out their research in Cambrid and part of their duties will be to undertake university teaching the recommendation of the Head of the Department in which Fellow is working. Persons of either sex may be elected. A Fel who on election is not a member of the University or of Girton Newnham College will be admitted, if a man, as a member of University, or, if a woman, as a member of Girton or Newnh College. Fellowships will be tenable for periods to be determin in each case by the managers, but not exceeding five years in a The annual stipend will normally be £600, but may be varied; will be subject to deduction of 5% under the University Sup annuation Scheme. A Fellowship will not be tenable with stipendiary Fellowship of a College, or with any University stude ship or scholarship, or with any University office. Applications m reach the Registrary, at the University Registry, not later th April 30. They should contain particulars of the subject in wh the candidate proposes to research, and must be accompanied by statement of his career (including date of birth), by copies of a papers he may have published, or by references thereto, and by t names of at least two referees. Not more than two testimoni may be sent. The Universities at which Imperial Chemical Industr Fellowships are tenable are Birmingham, Cambridge, Durham, Edi burgh, Glasgow, Liverpool, London, Manchester, and Oxford. Fe conditions of candidature at Universities other than Cambridge notices issued by those Universities should be consulted.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Dr. Macdonald Critchley, F.R.C.P., will deliver the Croonian Le tures on "Problems of Naval Warfare under Climatic Extremes before the Royal College of Physicians of London (Pall Mall E S.W.) on Tuesday and Thursday, May 8 and 10, at 4.30 p.m.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

RESTORATION FUND

The King has honoured the Royal College of Surgeons of Engl by making a donation to the Fund for the Restoration and Develo ment of the College, which suffered serious damage by enemy act in 1941. His Majesty is Visitor of the College, and the Preside and Council and all Fellows and Members are extremely grate for this further mark of His Majesty's favour and for the cons encouragement the King has given to them in the heavy task wh lies before them.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the incidence of infectious disea declined, there being 736 fewer notifications of measles, 2 of acute pneumonia, 83 of scarlet fever, and 77 of whoopi cough.

Except that Yorks West Riding reported 41 fewer ca than last week, the local trends of scarlet fever changed lit Whooping-cough was less prevalent in the north; in the so there was a small rise. The notifications of measles contin to mount in the south; the combined areas of London a the south-eastern and south-western counties had an incre of 524. Leicester had 203 more cases than last week, Nottinghamshire 147; but Derbyshire had 257 fewer, Lan shire 190, Cheshire 181, Warwickshire 180, Durham 1 Middlesex 146, Staffordshire 141, Essex 129, and Yorks E Riding 115.

The incidence of dysentery continues high. There w fresh outbreaks during the week in Buckinghamshire (Am sham R.D. 13, Eton R.D. 20), Dorsetshire (18; Sherborne U 13), Southampton (16; Bournemouth C.B. 5, Andover M.B. 1

Notifications in London rose from 34 to 69; of these, 31 were reported in Stoke Newington, and the remaining 38 involved seventeen boroughs. Other large returns were Lancashire 29, Yorks West Riding 27, Essex 27, Middlesex 18, Surrey 17, Gloucestershire 15, Devonshire 14, Cheshire 13.

In *Scotland* 29 fewer cases of scarlet fever were reported, and 20 of measles. Notifications of dysentery rose by 30, the incidence of this disease having increased by 100% since January. The largest returns of dysentery were in Edinburgh 55, Glasgow 35, Falkirk 23, Renfrew County 19. There has been a widespread attack of violent sickness and mild dysentery in Southern Scotland. The illness lasts two or three days, but leaves the patient weak and unfit for work for another week. The cause of the outbreak has not been discovered.

In *Eire* there were 8 more cases of diphtheria than last week, but the notifications of measles were halved.

In *Northern Ireland* diphtheria notifications fell from 25 to 7, and measles from 93 to 87.

Influenza

If judged by the number of deaths from this cause in the great towns the seasonal rise of influenza mortality during this winter has been unusually light and of very short duration. Taking for comparative purposes the period when the weekly deaths were 50 or more as the peak of the epidemic curve, the following distribution is obtained for the great towns.

	1944–5	1943–4	1942–3	1941–2	1940–1	1939–40	1938–9
No. of consecutive weeks when deaths were 50 or more	8	13	14	11	16	16	19
No. of deaths in these weeks	532	5,435	1,211	791	2,391	4,798	3,376
Average number of deaths per week	67	418	87	72	149	300	178

Quarterly Returns for Scotland

The birth rate during the December quarter was 18.8 per 1,000, the highest rate for a fourth quarter since 1930. Infant mortality was 64 per 1,000 registered live births, this being 8 below the average of the five preceding fourth quarters. Maternal mortality was 3.0 per 1,000 live births; this rate is considerably lower than that of any previous December quarter and almost the lowest for any quarter in Scotland. The general death rate of 13.1 per 1,000 was the same as the five-years average. The death rates from all forms of tuberculosis and from respiratory tuberculosis were 72 and 58 per 100,000, and were respectively 1 and 3 above the five-years average. There were 46 deaths from diphtheria, 42 from whooping-cough, 7 from measles, and 6 from scarlet fever.

The preliminary return for the whole of 1944 shows that the birth rate was 19.2 per 1,000, and was the highest rate recorded for Scotland since 1930. Infant mortality, at 65 per 1,000 live births, was the same as in 1943, the lowest rate recorded in Scotland and 12 below the pre-war average (1934–8). The general death rate was 12.9 per 1,000, and 0.7 below the average of the five preceding years. 183 deaths—the smallest number ever registered from this disease—were attributed to diphtheria. Deaths from other infectious diseases were: whooping-cough 179, cerebrospinal fever 94, measles 46, scarlet fever 39, typhoid and paratyphoid fevers 6. Deaths from all forms of tuberculosis and respiratory tuberculosis numbered 3,935 and 2,978 respectively, compared with 3,959 and 2,976 in 1943.

Week Ending March 10

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,424, whooping-cough 1,502, diphtheria 472, measles 25,049, acute pneumonia 813, cerebrospinal fever 77, dysentery 412, paratyphoid 5, typhoid 5.

The second series of postgraduate scholarships for nurses (the first were given last year), which are being awarded by the Hospital Saving Association out of its 21st birthday funds, include two scholarships for nursing administrators of approximately £250 each; two for nurse dietitians of £250 each; four for nurse teachers of £250 each; four for health visitors of £105 each; six for industrial nurses of £65 each; and four for midwife teachers of £75 each. In future years the H.S.A. may vary the scholarships in number or in kind. As last year, the scholarships will be available at any of the recognized training centres, and are open to nurses who are registered in the general part of the State register and have trained in a voluntary or local authority hospital within the area of King Edward's Hospital Fund for London. Candidates will be required to sit for a competitive examination conducted by the Royal College of Nursing, from whom, at 1A, Henrietta Place, Cavendish Square, W.1, application forms and all particulars may be obtained.

No. 9

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 3.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1945 (a)	(b)	(c)	(d)	(e)	1944 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	77	5	33	8	1	53	8	19	5	4
Deaths		2	—				1	—		
Diphtheria	470	21	141	112	7	681	35	176	110	25
Deaths	10	1	1	4	—	13	1	1	3	—
Dysentery	399	69	165	—	—	218	33	82	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	—	—	—	1	—	1	1	—
Deaths		—					—			
Erysipelas			51	10	3			35	9	3
Deaths		—					1			
Infective enteritis or diarrhoea under 2 years				16					7	
Deaths	58	10	13	12	4	56	6	9	15	2
Measles*	22,480	986	433	25	87	1,987	279	218	425	1
Deaths	18	—	1	—	—	2	—	1	6	—
Ophthalmia neonatorum	67	5	19	1	—	69	6	20	—	—
Deaths										
Paratyphoid fever	3	—	2 (B)	—	—	4	1	3 (B)	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	905	48	15	14	3	983	63	16	12	10
Deaths (from influenza)	39	6	4	—	1	50	3	4	3	2
Pneumonia, primary			254	21				282	24	
Deaths		48		6	10		50		11	11
Polio-encephalitis, acute	—	—				4	—			
Deaths		—					—			
Poliomyelitis, acute	4	—	—	—	1	6	—	—	—	—
Deaths		—					1			
Puerperal fever			16		1		2	9		1
Deaths										
Puerperal pyrexia‡	124	10	13	1	2	154	6	14	1	3
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,461	53	199	23	35	1,997	118	223	25	77
Deaths	2	—	—	—	—	2	—	—	—	—
Smallpox	—	—	—	—	—	8	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	13	1	1	16	1	3	—	—	5	3
Deaths	—	—	—	1	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,462	66	163	79	6	1,914	187	103	49	11
Deaths	10	—	1	2	2	13	4	1	1	1
Deaths (0–1 year)	413	49	64	33	26	470	73	70	54	28
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births	4,959	701	611	230	156	5,962	1,153	645	278	175
Annual death rate (per 1,000 persons living)			13·9	14·8	§			14·8	18·1	§
Live births	7,008	765	820	332	267	7,277	894	865	485	258
Annual rate per 1,000 persons living			16·4	21·4	§			17·6	31·7	§
Stillbirths	213	28	33			244	33	38		
Rate per 1,000 total births (including stillborn)			39					42		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

Celebrations in connexion with Lawson Tait's Centenary will be held in Birmingham at the end of next June. The Midland Medical Society, the Women's Hospital, and the University are sponsoring the arrangements. It is probable that these will consist of an oration in Tait's honour and other functions as circumstances permit.

A meeting of the Medical Society for the Study of Venereal Diseases will be held at 11, Chandos Street, W., to-day (Saturday, March 24) at 2.30 p.m., when a communication on "Early Syphilitic Infection treated by Intensive Arsenotherapy and by Penicillin" will be given by Surg. Capt. T. R. Lloyd-Jones, R.N., and Surg. Lieut.-Cmdr. F. G. Maitland, R.N.V.R.

A meeting of the Middlesex County Medical Society will be held at West Middlesex County Hospital, Isleworth, on Tuesday, March 27, at 5.30 p.m., when Sir Joseph Barcroft, F.R.S., will speak on "Movements of the Human Foetus," illustrated by a film produced by Dr. Deane, Miss Titcombe, and members of the obstetric staff. At 6.15 p.m. Mr. Frank Law will talk on "Ophthalmoscopy in General Medicine."

Dr. Robert Sutherland will give an address on "The Principles and Methods of Health Education" before a meeting of the Polish Medical Association in the United Kingdom at B.M.A. House on Tuesday, March 27, at 5 p.m.. A discussion will follow. All interested persons will be welcome.

A meeting of the Paddington Medical Society will be held at St. Mary's Hospital, W., on Tuesday, March 27, at 9 p.m., when Mr. F. A. Juler will give a lecture on "Modern Remedial Measures in Ophthalmology."

A meeting of the Scottish Group of the Association of Industrial Medical Officers will be held in the orthopaedic department of the Western Infirmary, Glasgow, on Wednesday, March 28, at 2.30 p.m., when papers will be read by Prof. C. W. Illingworth on "The Peptic Ulcer, with Special Reference to Factory Conditions," and by Mr. Roland Barnes on "Treatment of the Painful Shoulder, and the Problem of Resettling in Industry." Clinical cases will be demonstrated. Medical practitioners interested in industrial medicine are invited to attend.

The Royal Society has now been informed that H.M. Treasury has made provision in the estimates for the fiscal year 1945–6 for the following grants which are administered by the Royal Society: for scientific investigations, £14,000; for scientific publication, £7,000; for scientific congresses, £1,600. In view of the greater amounts to be available if these estimates are accepted by Parliament, and of present changing conditions, the Royal Society has decided that more frequent allocation is desirable. The last dates, therefore, in 1945, for receiving applications for grants from the Parliamentary grant-in-aid for scientific investigations will be March 31, July 31, and Nov. 30, and the last dates for receiving applications for grants from the Parliamentary grant-in-aid for scientific publication will be June 15 and Nov. 15.

According to a joint statement by the Ministries of Supply and Health production of penicillin is now increasing rapidly and distribution is being expanded. Supplies will shortly be sent by the Ministry of Health to more than 200 large hospitals, which will issue it to smaller hospitals as required. Most of the cases treated with penicillin will be in hospitals, but general practitioners will be able to get supplies for patients who cannot be taken to hospital. It is too early yet to say when distribution will start through ordinary commercial channels.

As a result of severe damage to the in-patient department of the West End Hospital for Nervous Diseases, London, it has been necessary to abandon the buildings for the present. Temporary in-patient accommodation at the Princess Louise Hospital for Children, North Kensington, has been obtained by the courtesy of the committee of management. The out-patient department of the hospital continues as usual (with daily clinics excepting Saturday) at Welbeck Street, W.1.

A portrait by Mr. Frank Salisbury of the late Mr. L. R. Braithwaite, the distinguished Leeds surgeon, was unveiled in the board room of the General Infirmary at Leeds on March 2 by Mrs. Braithwaite, after it had been presented by Mr. Digby Chamberlain, on behalf of the subscribers, to the chairman of the Board of Management. A replica has been accepted by the Royal College of Surgeons of England, of which at the time of his death Mr. Braithwaite was a vice-president.

Sir Robert Hutchison has been appointed consulting physician to the Royal Dental Hospital of London in succession to the late Sir Humphry Rolleston.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to The EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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ANY QUESTIONS?

Pregnancy and Acute Rheumatism

Q.—*A woman of 25 had acute rheumatism at the ages of 10 and 17. Since then she has enjoyed good health and was able to complete her training as a nurse. On routine medical examination a diagnosis was made of mitral stenosis, but she was accepted for military service. She now wishes to know if it would be safe for her to have a baby. Examination reveals no evidence of heart disease except a systolic murmur. Since the second attack she has restricted her activities—no cycling, no swimming, no hill-climbing. What advice should be given?*

A.—In assessing the prognosis for pregnancy in a patient who has had rheumatic fever it is important to know what effect, if any, the disease has had on cardiac function. Three main facts must be taken into consideration: the nature of the cardiac lesion, the degree of cardiac enlargement, and the exercise tolerance. In this case precise data on these three points are not given. It is stated that a diagnosis of mitral stenosis was made, although there is apparently only a systolic murmur and no diastolic murmur. Possibly the diastolic murmur can be elicited only after exercise. The degree of cardiac enlargement is not stated, nor is there evidence of the present state of the patient's exercise tolerance, since only voluntary restriction of activity is noted. But as she has been able to carry out her training as a nurse successfully, it seems that her exercise tolerance is not seriously impaired. If *exercise tolerance is good and there is no cardiac enlargement*, this patient could reasonably be expected to go through two or even three pregnancies without any risk of deterioration in the cardiac condition. Careful supervision would be essential. If a serious breakdown of cardiac function should occur during pregnancy, the patient should be advised not to become pregnant again. In any case, pregnancies should be spaced so as to ensure an interval of two to three years between each child. The chief danger in this case would lie in a fresh attack of rheumatic fever, especially if this occurred while the patient was pregnant. The chance of this is slight.

Thallium Acetate, Hirsutism, and Baldness

Q.—*Can you tell me if thallium acetate can be used for hirsuties other than by internal consumption?*

A.—Over 30 years ago Dr. Sabouraud of Paris was consulted by a number of patients suffering from baldness. All of them had been victims of an epidemic of enteritis, prevalent at that time in Paris. Sabouraud, with his acute mind, discovered that the baldness occurred only among patients who had been given acetate of thallium by the mouth in the treatment of the epidemic, and that led him to use acetate of thallium in an ointment for superfluous hairs. The practice has been entirely abandoned because it has been found that acetate of thallium acts only if absorbed in amounts sufficient to cause fall of hair—a dose that is always dangerous in an adult. The answer to the question is that treatment of this kind is either valueless or dangerous.

Raynaud's Disease

Q.—*A woman aged 45 has Raynaud's disease. The first and second fingers of each hand have some small black patches of gangrene on them. There is no albumin or sugar in the urine, and the blood pressure is normal. Any suggestions for treatment, apart from operation, would be welcome.*

A.—Gangrene of the fingers in Raynaud's disease is nearly always associated with thrombosis of the digital arteries; recovery, with the recanalization of these arteries and the opening up of small collaterals. The blood-flow to the affected digits can be increased to the limit which the vessels will carry by a cervico-dorsal sympathectomy, or alternatively by keeping the body warm. The

crease in blood-flow produced by warming the body adequately is least as great as after sympathectomy. The only difficulty is to maintain an adequate degree of heat. If the patient is in bed, four or six hot-water bottles arranged near the trunk, and changed every 4 to 6 hours, usually suffice. If the patient is up, a warm atmosphere and thick clothing to the body are the best methods.

Ethyl Alcohol and Shortage of Spirits

Q.—It is impossible to obtain spirits for use as a stimulant in the wards, and the Government has prohibited the manufacture of sal volatile; so I have recently given patients diluted ethyl alcohol, coloured and flavoured, as a substitute. Is there any medical objection to ethyl alcohol being given in place of brandy or whisky?

A.—There is no objection on medical grounds to the use of suitably flavoured and diluted ethyl alcohol. It can act as a stimulant only by reflex from local irritation. After absorption it is purely depressant.

There is a strong reason why alcohol should not be used in this manner, and that is that there is a shortage of it. We have been asked to avoid prescribing tinctures on that account.

Post-operative Venous Thrombosis

Q.—Is a patient with recent post-operative thrombosis of the deep femoral veins liable to embolism if allowed to walk or move unduly? The routine for patients who develop unilateral oedema of leg during the post-operative period is immobilization; how long should this be maintained?

A.—Direct evidence of the kind here asked for is difficult or impossible to obtain, but certain conclusions may be drawn from indirect evidence. In 1941 N. W. Barker and other workers at the Mayo Clinic investigated 1,260 cases of venous thrombosis after operation; among these there were 273 cases of clinically diagnosed ilio-femoral thrombosis, of which only 18 were followed by fatal pulmonary embolism. The embolus commonly came from a recent thrombus in the apparently unaffected limb; when it came from the swollen limb it was always within the first four days of the clinical symptoms. They conclude: "After thrombo-phlebitis has developed and existed for more than three or four days the thrombus does not attach to form an embolus, but emboli may occur if a new thrombus forms in a proximal vein or in a vein elsewhere in the body" (*Proc. Mayo Clin.*, Jan. 15, 1941, p. 33). From this we may infer that movement of the affected limb is not likely to lead to detachment of the primary thrombus after the fourth day. The chief aim should be to prevent thrombosis in other veins by the use of heparin or allied drugs. When a patient develops oedema of one leg after operation, it is usual to immobilize the limb for a period of from 4 to 6 weeks.

Enlarged Prostate and Defaecation

Q.—A man aged 68 has a moderately enlarged, non-malignant prostate, without much urinary frequency. His chief trouble is the occasional tendency to defaecate when he is about to micturate.

A.—Difficulty in micturition due to prostatic obstruction is always liable to cause a patient to feel that he may defaecate at the same time as he is emptying his bladder. There is no remedy for this except either to deal with the obstruction or to ensure that the lower bowel is empty.

Certification of Lunatics

Q.—What is the legal process, now, as to certification of lunatics? I am told that I cannot alone certify anyone, but must call in the relieving officer, even for a "three-day order."

A.—The ordinary procedure of certification in lunacy requires two medical certificates, which are issued by two independent practitioners in support of a petition presented by the nearest relative of the patient to a judicial authority, who signs a reception order authorizing the patient to be received and detained. There are, however, circumstances in which a patient can be lawfully detained on one medical certificate. If a patient is likely to injure himself or others unless he is restrained at once, he may be received into care on an urgency order. This is signed by the nearest relative available and supported by one medical certificate, which need not be given by the usual medical attendant. The patient must be received within two clear days, and the order remains in force for seven days only. Such an order may be used for the reception of a rate-aided patient, but then it must be signed by the public assistance officer. Similarly, a summary reception order made by a justice of the peace for the reception of a rate-aided patient is supported by one medical certificate. This kind of order may also be used for a person of unsound mind not rate-aided who is wandering at large, or not under proper care and control, or cruelly treated or neglected.

The expression "three-day order" does not seem to correspond to any order recognized by the Lunacy and Mental Treatment Acts; and it is not legally necessary in the circumstances outlined above for the certifying practitioner to associate himself with the relieving officer unless an urgency order is used for the reception of a rate-aided patient.

Urea and Migraine

Q.—What is the rationale of treating cases of migraine with urea? Has any work been published to show in what proportion of cases this is successful, or which type of case is benefited? How long should the treatment be continued?

A.—An association between water retention and attacks of migraine is frequently observed, an oliguria making its appearance immediately before or coincidently with an attack. In some patients the water retention may be explicable, though in a somewhat speculative way, by dietetic, endocrine, or neurological hypotheses. A high carbohydrate intake is often associated with water retention, especially in women, and cases of migraine associated with such a diet have often been reported (e.g., Hare, *The Food Factor in Disease*, London, 1905). In many women a water retention of endocrine origin occurs immediately before the menstrual period, a time at which some patients are liable to severe headache. The headache is relieved coincidently with a profuse diuresis when menstruation is well under way. I have seen a patient in whom there was clinical evidence of a functional derangement of the hypothalamus (obesity, sexual weakness, disturbance of the sleep rhythm, excessive sweating, hyperpiesis) and in whom migraine and extreme oliguria (amounting almost to anuria) alternated with diuresis and freedom from attacks. He was permanently relieved by diet and diuretics. J. A. Brown (*B.M.J.*, 1943, **2**, 201) reported the case of a man whose migraine was accidentally relieved during a urea-concentration test, both he and Sir Walter Langdon-Brown (*B.M.J.*, 1943, **2**, 430) referring to the findings of Goldzieher that in migraine there may be severe water retention. A full bibliography can hardly be given in a short reply, but the evidence that in *some* cases there is a relation between migraine and water retention is strong though by no means complete. It is quite certain that many patients do not fall into this group at all. Treatment by means of a low-carbohydrate, low-fat, low-fluid, low-salt, high-protein diet combined with diuretics (e.g., urea 15 grammes t.d.s.) is worth trying in every case. It certainly works in some. The treatment can often be "slackened off" gradually, but to some extent it must be continued permanently.

"Grumbling Appendix"

Q.—What is the mechanism which produces a "cure" in a moderately severe case of gastroptosis where a grumbling appendix is removed. The patient had considerable mental anxiety prior to the gastroptotic condition, and the writer can recollect being informed by an eminent London surgeon that a grumbling appendix does not exist.

A.—It is extremely doubtful whether such a pathological condition as chronic appendicitis exists, though recurrent appendicitis and peri-appendicular adhesions following an acute attack of appendicitis might be included under the heading of a "grumbling appendix." Abdominal pain and distress due to enterospasm may occur as symptoms of an anxiety neurosis, particularly in the asthenic visceroptotic type of patient. Many factors contribute to the relief produced by operation: on the superficial level, confinement to bed, withdrawal from a distracting environment, sympathy, etc.; on the deeper level, symbolic removal of the bad internal object which is responsible for the anxiety, self-punishment, etc. The policy is merely one of appeasement of the neurosis, the "cure" is likely to be short-lived, and other symptoms of the neurosis are likely to become increasingly troublesome.

Application of Unna's Paste Bandage

Q.—A patient who must be up and about finds elastoplast unsuitable for his varicose ulcer of the leg. What treatment do you suggest?

A.—The best treatment for this patient is the small but important operation of simultaneous ligature and injection of the varicose veins. It will cause incapacitation for a week. Failing this, an Unna's paste bandage is the best remedy. The ulcer and leg are cleaned with methylated ether: the "sulpha" drugs should be avoided, because some patients prove to be hypersensitive to them with a closed bandage, and develop an intractable dermatitis.

The application of the Unna's paste bandage is important. First, the leg should be elevated for at least half an hour and a firm cotton bandage applied with a view to reducing the swelling. The preparation of the Unna's paste bandage is as follows: An ordinary three-inch cotton bandage is loosely re-rolled, at the same time clearing the edges freely of the cotton shreds. It usually needs two, possibly three, bandages for one leg. These are autoclaved and then dropped into a jar of boiling Unna's paste for a quarter of an hour. The bandages are lifted out into a sterile receiver until they are cool: they are therefore sterile. Longitudinal strips of three thicknesses of bandage are placed over the front, sides, and back of the leg: these are to prevent the transverse turns of the bandage cutting into the skin, and are essential if the application is to be comfortable and retained—as frequently they are—for 6 to 12 months. The bandage begins at the root of the toes with

the foot in a comfortable dorsiflexed position: this also is necessary to minimize the transverse creases which are the cause of discomfort to the wearer. The bandage is applied with a moderate amount of tension, special care being taken that it is free from creases, twists, and folds. It takes several minutes to apply, but when it is recalled that the correct application will heal the ulcer and will stay on for months, it is worth the trouble. Each turn of the bandage overlaps its predecessor by two-thirds, so that the final Unna's paste casing is three thicknesses plus the three thicknesses of longitudinal strips. These dressings are always well tolerated; it is the exception to find a patient whom they do not suit. Finally, the wet bandage is dried off by the application of an ordinary cotton bandage beginning at the knee and passing downwards; the bandage will be found to lie better when so applied. Plaster-of-Paris is useless for encouraging epithelization, and, moreover, is unnecessarily inconvenient.

Patients with ulcers must wear stout shoes from early morning to last thing at night; ladies should be advised to procure a boy's shoes, which are made in wider fittings and are robuster than ladies' shoes. The local cobbler will raise and smarten up the heels.

Recurrent Polyneuritis

Q.—*A woman of 72 has had three attacks of severe polyneuritis in the past 10 years. Each attack lasted 2 to 3 months, with symptoms, except for slight numbness, subsiding completely between the attacks. She has had a myocarditis and complete achlorhydria for some 15 years. What are the aetiology, treatment, prevention, and prognosis? Should vitamin B be taken regularly either by mouth or by injection, and if so, in what dosage?*

A.—Recurrent polyneuritis is a rare disorder, the cause of which is not known. There is evidence that in some cases avitaminosis may be one factor in its aetiology, and in the case reported the complete achlorhydria is perhaps more consistent with a metabolic than an infective cause. If the laboratory facilities are available, something might be learned by measuring the patient's urinary excretion of vitamin B_1. For prophylaxis the patient should take all the vitamins of the B group. Tablets providing 1 mg. each of vitamins B_1 and B_2 and 15 mg. of nicotinic acid amide are on the market, and one of these three times a day would give an adequate dosage, assuming absorption from the alimentary canal to be normal. It would also be wise to give an intramuscular injection of liver extract in doses of 2 to 4 c.cm. once a month. If another attack of polyneuritis occurs the same treatment should be continued with the addition of a daily injection of 10 mg. of vitamin B_1, and the physical treatment appropriate to polyneuritis. The prognosis is uncertain and further attacks may occur.

Nose-picking and Nail-biting

Q.—*A boy of 7 years (adopted at 6 weeks old, and brought up knowing this fact) has been biting his nails and picking his nose for about a year. He is getting worse. What should be done?*

A.—Judging from the facts given, this case appears to be one of mixed aetiology. The constitutional factors should first be investigated, especially the calcium metabolism; for parathyroid deficiency often gives rise to such tics. Psychologically, the Freudians regard nail-biting and nose-picking as sexual manifestations related to masturbation, and this view is often borne out by the facts. But, taken in itself, nail-biting reveals a state of tension, and is evidence of repressed assertiveness or aggression. (Children suffering from pent-up energy, say before an examination, often bite their nails.) The thwarting may be caused by undue external discipline, but it may also be the result of conditions in the child's own mind; these latter require special investigation by a child psychiatrist. The thwarting may, in fact, be due to the feeling of inadequacy caused by the physiological deficiency already referred to. As a first-aid measure, the child should be encouraged to do things with his hands, both in order to employ his hands and also to give outlet to his assertiveness and to give him confidence. But he must not be pressed to achieve things, as this would increase the tension.

Caesarean Section after Vaginal Fistula

Q.—*A primipara with small pelvic measurements took some 24 hours to reach full dilatation, and finally, after manual rotation of a persistent occipito-posterior head, had a forceps delivery of a live child. Three days later, despite passing urine normally, she developed a cysto-vaginal fistula. This was successfully repaired five weeks later. She is now pregnant again, three years after the first child. The scar of the repair is sound and of a hard unyielding consistency. In view of the past history and the tough anterior vaginal wall, is the correct treatment to perform Caesarean section at or near term?*

A.—The usual procedure is to advise Caesarean section for cases of this kind. The contracted pelvis may be responsible for another difficult delivery, with a tight fit between the head and the pelvis, so that the old operation scar may be damaged and the fis recur. The majority of obstetricians would unhesitatingly perf Caesarean section at term in such a case.

Children's Wards and Cross-infection

Q.—*How should a children's ward be designed to reduce cr infection?*

A.—Cross-infection in a children's hospital or unit can best countered by including a large proportion of single rooms (up 50% of the available beds); by small wards of 4 to 8 beds; by g ventilation and lighting; by a sufficiency of wash-hand basins in wards, sterilizers in the annexes, and modern labour-saving equ ment; and, most important of all, by an adequate and prope trained nursing staff. The sources, modes of spread, and meth of control of "hospital infection" should be taught to all nur early in their career. There can, of course, be no standard patt of ward, but a modern and well-designed unit has lately b described by Jacoby (*Arch. Dis. Childh.*, 1944, **19**, 26). This u of 35 beds consisted of one 6-bedded ward, four 4-bedded war two 2-bedded wards, and four single-bedded wards, with the us annexes, milk-room, and *accommodation for nursing mothers.* E design alone will not accomplish much if the administrative a nursing precautions given in detail in M.R.C. War Memo. No. are not put into effect. Thus examination and distribution of ca on admission must be done by an experienced R.M.O.; childr under a year must be nursed in single rooms; great care must taken with the preparation of infant feeds; masks should be wo by nurses and medical staff as required; visitors should be di couraged; and passive or active immunization of patients should practised whenever practicable.

LETTERS, NOTES, ETC.

Psychiatry in the Services

A medical psychologist writes: The answer to the question page 283 of the *Journal* of Feb. 24 regarding psychiatry in the Servic can hardly go unchallenged. In the first place psychiatry does n include *all* acts of behaviour; that is the province of the wid science of psychology. Psychiatry, as its name implies, means hea ing, and therefore deals only with abnormalities. Nor can one l go unchallenged the writer's exclusion of the "lack of moral fibre from the concern of the psychiatrist, for this may, among oth things, be due to constitutional disorders such as are to be fou in the asthenic type. In any case the writer contradicts himself, f if psychiatry deals with all acts of behaviour, why does he tell t psychiatrist to "stick to his last" and not deal with lack of mor fibre, but to leave that to the executive authorities? Is not pi a form of behaviour?

Coloured Film of Casualties

Mr. W. MCADAM ECCLES, M.S., F.R.C.S. (London, W.1) writes Since damage and casualties are still occurring in Southern a sometimes Northern England, though the day of their cessation drawing near, it is not inappropriate to remind medical officers a others associated with Civil Defence and A.R.P. that the unique coloured film of "Casualties" is still available for exhibition alo having been shown to many thousands of workers. Particulars c be obtained from the manager, Mr. J. Magrill, 17, St. Quint Avenue, London, W.10.

Treatment for Superficial Eye Infections

Dr. SHEILA MILLAR-DANKS (Dulwich Hospital, S.E.22) writes I read with interest Dr. Graydon Hume's letter (Jan. 27, p. 12 concerning superficial eye infections. I was aware of the benefit a stable solution of ephedrine and silver vitellinate for nasal u having read the correspondence on the subject in the *Journal* December, 1943, and January, 1944, but its value for eye infectio was new to me, and especially the fact that stabilization of the sol tion eliminated argyrosis. Although post-anaesthetic conjunctiv is becoming a rarity due to the increase in the use of closed metho of anaesthesia and decrease in the employment of ether as anaesthetic agent, it still occurs where the open method of admin tration is used. Possibly the solution suggested by Dr. Grayd Hume would be efficacious in dealing with the condition.

Corrections

An old Guy's man wishes to register a correction of the item news published on March 10 at page 353 recording a medical dinn at Delhi. The Director-General, I.M.S., Lieut.-Gen. J. B. Hance, a Cambridge and Guy's man, not an alumnus of Edinburgh.

The number of cases of pneumococcal meningitis which Dr. Davis stated had been seen in a sister hospital to his own was eig not eighty as given in the report in the *Journal* of March 17 (p. 37